Vol. 1019 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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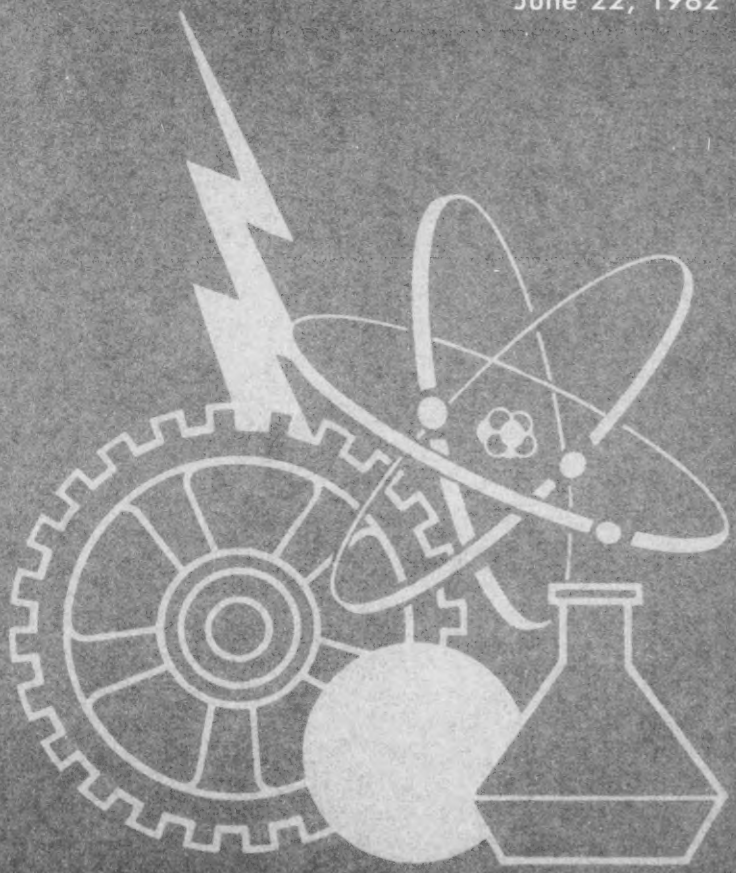

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,146,745, Re. S.N. 344,353, Filed Feb. 1, 1982, Cl. 179/7.1 TP, LOUDSPEAKER ENCLOSURE WITH MULTIPLE ACOUSTICALLY ISOLATED DRIVERS AND A COMMON PORT, Thomas A. Froeschle, et al., Owner of Record: *Inventors,* Attorney or Agent: Charles Hieken, Ex. Gp.: 235

4,175,782, Re. S.N. 321,835, Filed Nov. 16, 1981, Cl. 292/307.R, DEVICE FOR CLOSING BAGS, Eduardo De Lima Castro Neto, Owner of Record: *Inventor,* Attorney or Agent: Joseph A. DeGrandi, et al., Ex. Gp.: 355

4,198,718, Re. S.N. 370,623, Filed Apr. 22, 1982, Cl. 5/93B, PORTABLE FOLDING BED, Clella N. Ballard, Owner of Record: *Inventor,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 355

4,200,737, Re. S.N. 369,726, Filed Apr. 19, 1982, Cl. 536/87, PREPARATION OF WATER-INSOLUBLE CARBOXYMETHYL CELLULOSE ABSORBENTS, Herman L. Marder, et al., Owner of Record: *International Playtex, Inc., Stamford, Conn.,* Attorney or Agent: Stewart J. Fried, Ex. Gp.: 144

4,201,271, Re. S.N. 328,423, Filed Dec. 7, 1981, Cl. 173/146, QUILL DRIVE WITH VARIABLE FEED, Larry Evans, Owner of Record: *Gleason Works, Rochester, N.Y.,* Attorney or Agent: Andrew R. Basile, et al., Ex. Gp.: 353

4,216,552, Re. S.N. 370,690, Filed Apr. 22, 1982, Cl. 4/548, SINK MOUNTED INFANT BATHING DEVICE, Richard C. Gurolinick, Owner of Record: *Product Source, Inc., Laguna Hills, Calif.,* Attorney or Agent: George J. Netter, Ex. Gp.: 243

4,248,735, Re. S.N. 374,459, Filed May 3, 1982, Cl. 252/428, TREATMENT OF SILICA, Max P. McDaniel, et al., Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.,* Attorney or Agent: Louis N. French, et al., Ex. Gp.: 116

4,256,894, Re. S.N. 369,391, Filed Apr. 19, 1982, Cl. 546/345, PREPARATION OF CHLORINATED PYRIDINES, Thomas J. Dietsche, et al., Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, Ex. Gp.: 121

4,273,908, Re. S.N. 369,610, Filed Apr. 19, 1982, Cl. 528/44, PROCESS FOR THE PRODUCTION OF POLY(POLYISOCYANATE-POLYOL-ALKALI METAL SILICATE SOLID, David H. Blount, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 143

4,290,253, Re. S.N. 356,160, Filed Mar. 8, 1982, Cl. 53/410, METHOD OF PRODUCING SEALED PACKAGING CONTAINERS, Klaus Domke, et al., Owner of Record: *Robert Bosch GMBH, Stutgart, Germany,* Attorney or Agent: Michael J. Striker, Ex. Gp.: 324

4,295,308, Re. S.N. 368,581, Filed Apr. 15, 1982, Cl. 52/296, POLE BASE ASSEMBLY, BOLT CIRCLE ADAPTOR, Carl Korfanta, Owner of Record: *KSL Corp., Denver, Colo.,* Attorney or Agent: Bruce G. Klass, et al., Ex. Gp.: 354

4,297,460, Re. S.N. 374,114, Filed May 3, 1982, Cl. 526/98, TREATMENT OF SILICA, Max P. McDaniel, et al., Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.,* Attorney or Agent: Louis N. French, et al., Ex. Gp.: 144

4,298,558, Re. S.N. 369,336, Filed Apr. 16, 1982, Cl. 264/65, HIGH YIELD SILICON CARBIDE PRECERAMIC POLYMERS, Ronald H. Baney, et al., Owner of Record: *Dow Corning Corp., Midland, Mich.,* Attorney or Agent: Robert L. McKellar, et al., Ex. Gp.: 147

4,299,811, Re. S.N. 368,748, Filed Apr. 15, 1982, Cl. 423/578R, DEGASSING MOLTEN SULFUR, Thomas H. Ledford, et al., Owner of Record: *Exxon Research and Engineering Co., Florham Park, N.J.,* Attorney or Agent: Edward H. Mazer, et al., Ex. Gp.: 113

4,301,948, Re. S.N. 344,695, Filed Feb. 1, 1982, Cl. 222/341, DISPENSER FOR PASTE-LIKE PRODUCTS WITH A MANUALLY ACTUATABLE PISTON, Joachim Czech, et al., Owner of Record: *Joachim Czech, Donaustauf, W. Germany,* Attorney or Agent: Joseph E. Kerwin, et al., Ex. Gp.: 311

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 28,176, Reexam. No. 90/000,202, Requested: May 21, 1982, Cl. 248/642, BRACKET FOR MOUNTING BOAT ACCESSORY, George F. Horton, Owner of Record: *Inventor,* Attorney or Agent: Wofford, Fails, Zobal, Ex. Gp.: 355, Requester: Lawrence F. Scinto, New York, N.Y.

4,265,393, Reexam. No. 90/000,204, Requested: May 24, 1982, Cl. 229/40, BOX CONSTRUCTION, Edgar L. Orchard, Owner of Record: *Orco Sales Co., Inc., St. Louis, Mo.,* Attorney or Agent: Kalish & Gilster, Ex. Gp.: 241, Requester: Dale H. Thiel, Kalamazoo, Mich.

1981 Commissioner's Annual Report

The Annual Report of the Commissioner of Patents and Trademarks for fiscal year 1981 is now in print. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 for $4.50 each.

May 26, 1982

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. 95,164 (SMITH & WESSON), Smith & Wesson, **filed** Apr. 27, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-1850, *Smith & Wesson* v. *The Franklin Mint, et al.*

Reg. No. 297,594 ("VL" AND DESIGN), Louis Vuitton S.A., **filed** Apr. 2, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1634AWT, *Louis Vuitton S.A.* v. *Ricardo Bisio, et al.*

Reg. No. 509,839 (ROBBINS & MYERS), Robbins & Myers, Inc., **filed** Apr. 6, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-1557, *Robbins & Myers, Inc.* v. *American Lifting Products, Inc.*

Reg. No. 588,852 (AMERICAN RED BALL ETC. & DESIGN), American Red Ball Transit Co., Inc.; **Reg. No. 888,065** (CALL CALL AMERICAN RED BALL ETC. AND DESIGN), **same; Reg. No. 1,113,327** (RED CARPET MOVING SERVICE), **same, filed** Dec. 14, 1981, D.C., E.D. Tenn. (Winchester), Doc. Civ-4-81-75, *American Red Ball Transit Co., Inc.* v. *Ralph E. Gee, doing business as Aero American Moving & Storage, et al.* Plaintiff dismisses action without prejudice on Apr. 22, 1982.

Reg. No. 592,538 (BETZ) Betz Laboratories, Inc.; **Reg. No. 871,110, same, filed** Apr. 2, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2114 (WK), *Betz Laboratories, Inc.* v. *Albert Alperin.*

Reg. No. 623,260 (GMAC), General Motors Acceptance Corp., **filed** Jan. 13, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-22-Orl-Civ, *General Motors Acceptance Corp.* v. *G-Mac Motors, Inc., et al.* Joint Stipulation for Dismissal without prejudice filed Apr. 12, 1982.

Reg. No. 626,035 (CHANEL), Chanel, Inc.; **Reg. No. 930,567, same; Reg. No. 1,075,016** (CC DESIGN), **same, filed** Apr. 26, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2645 EW, *Chanel, Inc.* v. *Sakura Shoji, Inc., et al.*

Reg. No. 659,477 (SOVEREIGN ORDER OF SAINT JOHN ETC. AND DESIGN), Sovereign Order of St. John of Jerusalem, Inc.; **Reg. No. 713,193** (MALTESE CROSS AND DESIGN), **same, filed** May 7, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80-1771, *Sovereign Order of St. John of Jerusalem, Inc., et al.* v. *Charles L. T. Pichel.*

Reg. No. 660,183 (NABISCO AND DESIGN), Nabisco, Inc.; **Reg. No. 736,498** (TRIANGLE DESIGN), **same; Reg. No. 890,581** (NABISCO AND DESIGN), **same, filed** Aug. 27, 1981, D.C., S.D.N.Y., Doc. 81-5324 MP, *Nabisco, Inc.* v. *Tootsie Roll Industries, Inc.* Defendant shall not use in any manner any packaging, advertising, point of purchase or promotional or stationery material which bears or displays a red triangle lying in whole or in part in the upper left hand quadrant. Filed Apr. 15, 1982.

Reg. No. 664,746 (FREDERICK'S), Frederick's of Hollywood, Inc., **filed** Nov. 4, 1976, D.C., N.D. Ohio (Cleveland), Doc. 76-1166, *Frederick's of Hollywood, Inc.* v. *Fredric's Southland, Inc.* Stipulation and Order dismissing action with prejudice filed Mar. 3, 1978.

Reg. No. 670,644 (TEE-RIFIC), Alpha Mills Corp., **filed** Feb. 19, 1981, D.C., M.D. Fla. (Orlando), Doc. 81-66-Orl-Civ-Y, *Alpha Mills Corp.* v. *Tee-Riffic, Inc.* Defendant is perpetually restrained and enjoined from further infringing plaintiff's trademark. Filed Apr. 12, 1982.

Reg. No. 681,947 (ULTRA SHEEN), Johnson Products Co., Inc.; **Reg. No. 968,329, same; Reg. No. 968,846, same; Reg. No. 1,043,225, same, filed** Jan. 12, 1977, D.C., N.D. Ill. (Chicago), Doc. 77 C 108, *Johnson Products Co., Inc.* v. *Intercontinental Cosmetics, Inc.* Registrations are valid, subsisting and infringed. Defendant permanently enjoined from further infringing Plaintiff's trademarks. Filed Oct. 25, 1977.

Reg. No. 681,947 (ULTRA SHEEN), Johnson Products Co., Inc.; **Reg. No. 953,827, same; Reg. No. 968,329, same; Reg. No. 968,846, same, filed** Sept. 1, 1976, D.C., E.D. Pa. (Philadelphia), Doc. 76-2774, *Johnson Products Co., Inc.* v. *Rite Aid Corp., et al.* Registrations are valid and subsisting. Order entered on Mar. 3, 1978.

Reg. No. 688,864 (CARTE BLANCHE), Carte Blanche Corp.; **Reg. No. 721,049, same; Reg. No. 956,281, same; Reg. No. 1,015,976** (CARTE BLANCHE TRAVEL PLUS), **same; Reg. No. 1,031,003** (CARTE BLANCHE INTERNATIONAL SERVICE CENTRE), **same; Reg. No. 1,031,026** (CARTE BLANCHE INTERNATIONAL SERVICE CENTRE), **same; Reg. No. 1,031,058** (CARTE BLANCHE INTERNATIONAL SERVICE CENTRE), **same, filed** July 16, 1981, D.C., N.D. Ohio (Toledo), Doc. 81-479, *Carte Blanche Corp.* v. *Carte Maxim, Inc., et al.* Plaintiff is exclusive owner of the service mark, trademark and trade name CARTE BLANCHE and of the U.S. registrations therefor identified. Defendants permanently enjoined from using the mark, etc. of Carte Maxim and Carte Blanche. Filed Apr. 2, 1982.

Reg. No. 692,726 (NALDECON), Bristol-Myers Co., **filed** Sept. 25, 1981, D.C.N.J. (Newark), Doc. 81-3021, *Bristol-Myers Co.* v. *Generix Drug Corp.* Action settled and Order of Dismissal filed Apr. 22, 1982.

Reg. No. 693,417 (DOXIDAN), Hoechst Aktiengesellschaft **filed** May 22, 1980, D.C., S.D. Fla. (Fort Lauderdale), Doc. 80-6251-Civ-JAG, *Hoechst AG, et al* v. *Generix Drug Corp.* Plaintiff is the owner of Reg. No. 693,417 which is valid and subsisting. Defendant is perpetually enjoined and restrained from using on or in connection with the sale, advertising or offering for sale of laxative products, the term "D.O.S.-DAN" or "DOS-DAN" or any other reproduction, copy or colorable imitation of plaintiff's trademark. Filed July 30, 1980.

Reg. No. 703,556 (AAA), American Automobile Association; **Reg. No. 829,265, same, filed** June 16, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 2965, *American Automobile Assn., et al.* v. *WMW, Inc., doing business as AAA Transmission.* Judgment and Order of permanent injunction that Defendant perpetually restrained and enjoined from further infringing Plaintiff's trademark filed Apr. 10, 1982.

Reg. No. 713,193. (See Reg. No. 659,477.)

Reg. No. 721,049. (See Reg. No. 688,864.)

Reg. No. 724,764 (PANASONIC AND DESIGN), Matsushita Electric Industrial Co., Ltd.; **Reg. No. 746,848** (PANASONIC), **same; Reg. No. 774,063** (PANASONIC AND DESIGN), **same; Reg. No. 774,124** (PANASONIC AND DESIGN), **same; Reg. No. 800,220** (PANASONIC AND DESIGN), **same; Reg. No. 800,942** (PANASONIC AND DESIGN), **same; Reg. No. 808,808** (N PANASONIC AND DESIGN), **same; Reg. No. 808,840** (N PANASONIC AND DESIGN), **same; Reg. No. 808,841** (N PANASONIC AND DESIGN), **same; Reg. No. 808,849** (N PANASONIC AND DESIGN), **same; Reg. No. 808,862** (N PANASONIC AND DESIGN), **same; Reg. No. 838,277** (PANASONIC HI-TOP AND DESIGN), **same;**

Reg. No. 859,262 (PANASONIC), **same; Reg. No. 859,287** (PANASONIC), **same; Reg. No. 859,314** (PANASONIC), **same; Reg. No. 860,062** (PANASONIC), **same; Reg. No. 868,381** (PANASONIC), **same; Reg. No. 869,714** (PANASONIC), **same; Reg. No. 902,911** (PANASONIC), **same; Reg. No. 905,883** (PANASONIC), **same; Reg. No. 1,006,629** (PANASONIC), **same; Reg. No. 1,041,215** (PANASONIC), **same; Reg. No. 1,047,045** (PANASONIC), **same, filed** Mar. 15, 1979, D.C., E.D.N.Y. (Brooklyn), Doc. 79C704, *Matsushita Electric Industrial Co., Ltd., et al* v. *Corporate Distributors, Inc., et al.* **Same, filed** Mar. 20, 1979, D.C. Conn. (Hartford), Doc. H79-176, *Matsushita Electric Industrial Co.* v. *Wallcraft, Inc., et al.* **Same, filed** June 12, 1979, D.C., S.D.N.Y., Doc. 79-Civ-3070 RO, *Matsushita Electric Ind. Co., Ltd., et al* v. *Norman's House of Deals, Inc., et al.* **Same, filed** Mar. 15, 1979, D.C., S.D.N.Y., Doc. 79-Civ-1371, *Matsushita Electric Ind. Co., et ano* v. *Collins Industrial Co., et al.* Defendants are permanently enjoined from using the trademark and trade name PANASONIC in connection with the sale of any goods including wrist watches or the rendering of any services. Filed July 3, 1980. **Same, filed** May 4, 1979, D.C., S.D.N.Y., Doc. 79-Civ-2380 RO, *Matsushita Electric Industrial Co., Ltd., et al* v. *Tyme Watch Trading Co., et ano.* Defendants are permanently enjoined from using the trademark and trade name PANASONIC in connection with the sale of any wrist watches or the rendering of any services relating thereto. Filed July 23, 1980.

Reg. No. 736,498. (See Reg. No. 660,183.)

Reg. No. 746,848. (See Reg. No. 724,764.)

Reg. No. 765,131 (STANDARD & POOR'S HOURLY STOCK PRICE INDEXES), Standard & Poor's Corp., Inc.; **Reg. No. 765,132** (STANDARD & POOR'S DAILY STOCK PRICE INDEXES), **same; Reg. No. 765,133** (THE STANDARD "500"), **same, filed** Apr. 21, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2545 MP, *Standard and Poor's Corp., Inc.* v. *Commodity Exchange, Inc.*

Reg. No. 765,132. (See Reg. No. 765,131.)

Reg. No. 765,133. (See Reg. No. 765,131.)

Reg. No. 774,063. (See Reg. No. 724,764.)

Reg. No. 774,124. (See Reg. No. 724,764.)

Reg. No. 800,220. (See Reg. No. 724,764.)

Reg. No. 800,942. (See Reg. No. 724,764.)

Reg. No. 808,808. (See Reg. No. 724,764.)

Reg. No. 808,840. (See Reg. No. 724,764.)

Reg. No. 808,841. (See Reg. No. 724,764.)

Reg. No. 808,849. (See Reg. No. 724,764.)

Reg. No. 808,862. (See Reg. No. 724,764.)

Reg. No. 829,265. (See Reg. No. 703,556.)

Reg. No. 838,277. (See Reg. No. 724,764.)

Reg. No. 859,262. (See Reg. No. 724,764.)

Reg. No. 859,287. (See Reg. No. 724,764.)

Reg. No. 859,314. (See Reg. No. 724,764.)

Reg. No. 860,062. (See Reg. No. 724,764.)

Reg. No. 868,381. (See Reg. No. 724,764.)

Reg. No. 869,714. (See Reg. No. 724,764.)

Reg. No. 871,110. (See Reg. No. 592,538.)

Reg. No. 884,519 (VOIT), AMF, Inc.; **Reg. No. 912,787** (AMF), **same; Reg. No. 1,038,545** (DESIGN MISCELLANEOUS), **same, filed** Feb. 27, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-403-DWW, *AMF, Inc., et al* v. *Star Master, Inc., et al.*

Reg. No. 888,065. (See Reg. No. 588,852.)

Reg. No. 890,581. (See Reg. No. 660,183.)

Reg. No. 893,027 (UPS 'N DOWNS), Ups 'N Downs, Inc., **filed** Aug. 21, 1978, D.C., S.D. Fla. (Miami), Doc. 78-6364-Civ-NCR, *Ups 'N Downs, Inc.* v. *Caribe Trading Corp.* Defendants shall discontinue use of trade name Uppers & Downers on all advertisements, signs, etc. Filed July 14, 1979.

Reg. No. 893,027 (UPS 'N DOWNS), Ups 'N Downs, Inc.; **Reg. No. 1,020,183, same, filed** May 11, 1979, D.C., N.D. Calif. (San Francisco), Doc. C-79-1129 WAI, *Ups 'N Downs, Inc.* v. *Upsen Downs.* Defendants are permanently enjoined and restrained from using the trademark or trade name UPSEN DOWNS, UPS 'N DOWNS, or colorful variations thereof, upon or in association with the sale of garments, aprons, tablecloths, etc. Filed Sept. 18, 1979.

Reg. No. 895,561 (HOM), Innovations Pour L'Elegance Masculine; **Reg. No. 968,687** (DESIGN MISCELLANEOUS), **same; Reg. No. 1,068,573** (HOM), **same; Reg. No. 1,075,079** (HOM AND DESIGN), **same, filed** Mar. 29, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1973-GLG, *Innovations Pour L'Elegance Masculine* v. *Daniel Axel, Ltd., et al.*

Reg. No. 902,911. (See Reg. No. 724,764.)

Reg. No. 905,883. (See Reg. No. 724,764.)

Reg. No. 912,787. (See Reg. No. 884,519.)

Reg. No. 913,859 (RED WING), Red Wing Shoe Co.; **Reg. No. 918,991** (RED WING SHOES AND DESIGN), **same; Reg. No. 934,188** (RED WING SHOES AND DESIGN), **same; filed** Mar. 22, 1982, D.C., N.D. Iowa (Cedar Rapids), Doc. 82-2025, *Red Wing Shoe Co.* v. *Kollmann Shoe and Bike Shop, et al.* Stipulation of Settlement between parties filed on Apr. 23, 1982.

Reg. No. 918,991. (See Reg. No. 913,859.)

Reg. No. 930,567. (See Reg. No. 626,035.)

Reg. No. 934,188. (See Reg. No. 913,859.)

Reg. No. 953,827. (See Reg. No. 681,947.)

Reg. No. 956,281. (See Reg. No. 688,864.)

Reg. No. 968,329. (See Reg. No. 681,947.)

Reg. No. 968,687. (See Reg. No. 895,561.)

Reg. No. 968,846. (See Reg. No. 681,947.)

Reg. No. 992,654 (KINERET KOSHER), Kineret Foods Corp., **filed** May 7, 1979, D.C., S.D.N.Y., Doc. 79-Civ-2391-WCC, *Kineret Foods Corp.* v. *Sova Foods Co.*

Reg. No. 999,849 (ORGAN GRINDER), Organ Grinder, Inc.; **Reg. No. 999,850** (ORGAN GRINDER AND DESIGN), **same, filed** June 5, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-72071, *Organ Grinder, Inc.* v. *Gary R. Montgomery, et al.* **Same, filed** Sept. 28, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-1655, *Organ Grinder, Inc.* v. *Barbara L. Reilly, et al.*

Reg. No. 999,850. (See Reg. No. 999,849.)

Reg. No. 1,005,131 (CHICAGO AND DESIGN), Chicago Music, Inc.; **Reg. No. 1,006,059** (CHICAGO), **same Reg. No. 1,006,060** (CHICAGO), **same, filed** May 16, 1978, D.C., S.D.N.Y., Doc. 78-Civ-2245, *Chicago Music, Inc.,* v. *Cineamerica Distributing Corp.*

Reg. No. 1,006,059. (See Reg. No. 1,005,131.)

Reg. No. 1,006,060. (See Reg. No. 1,005,131.)

Reg. No. 1,006,468 (KIDS ARE PEOPLE TOO), Interstate United Corp., **filed** Apr. 30, 1980, D.C., S.D.N.Y., Doc. 80-Civ-2413-LWP, *Robert C. McAllister, Inc.* v. *Interstate United Corp.*

Reg. No. 1,006,629. (See Reg. No. 724,764.)

Reg. No. 1,015,027 (MOBIL), Mobil Oil Corp., **filed** Jan. 15, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-70148, *Mobil Oil Corp.* v. *Walter Meade, Inc.*

Reg. No. 1,015,976. (See No. 688,864.)

Reg. No. 1,020,183. (See Reg. No. 893,027.)

Reg. No. 1,020,793 (DESIGN OF RABBIT HEAD), Playboy Enterprises, Inc., **filed** June 12, 1981, D.C., S.D.N.Y., Doc. 81-Civ-3673-MJL, *Playboy Enterprises, Inc.* v. *Prismatix Decal, Inc.* Plaintiff is the owner of Reg. No. 1,020,793 which is valid and subsisting. Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed Apr. 2, 1982.

Reg. No. 1,031,003. (See Reg. No. 688,864.)

Reg. No. 1,031,026. (See Reg. No. 688,864.)

Reg. No. 1,031,058. (See Reg. No. 688,864.)

Reg. No. 1,038,545. (See Reg. No. 884,519.)

Reg. No. 1,041,215. (See Reg. No. 724,764.)

Reg. No. 1,043,225. (See Reg. No. 681,947.)

Reg. No. 1,047,045. (See Reg. No. 724,764.)

Reg. No. 1,049,279 (B.I.D.S.), Raymond L. Gaio, **filed** Mar. 12, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-0722, *B.I.D.S., Inc. and Raymond L. Gaio* v. *McGraw-Hill, Inc.*

Reg. No. 1,054,788 (KING AND DESIGN), King Meat Packing Co., **filed** Feb. 19, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-0825-WPG, *King Meat Packing Co.* v. *Apex Meat Co., Inc., et al.*

Reg. No. 1,068,573. (See Reg. No. 895,561.)

Reg. No. 1,075,016. (See Reg. No. 626,035.)

Reg. No. 1,075,079. (See Reg. No. 895,561.)

Reg. No. 1,086,041 (CALVIN KLEIN), Calvin Klein Co., **filed** Apr. 21, 1982, D.C., S.D. Fla. (Miami), Doc. 82-808-Civ-EPS, *Calvin Klein Co., et al* v. *Transfermania, Inc.*

Reg. No. 1,090,517 (SUPERLAWNS), Superlawns, Inc., **filed** Mar. 22, 1982, D.C., C.D. Ill. (Danville), Doc. 82-2079, *Superlawns, Inc.* v. *Jim Carso, doing business as Super Lawn of Camargo.*

Reg. No. 1,107,259 (GG DESIGN), Gucci Shops, Inc.; **Reg. No. 1,107,311, same; Reg. No. 1,143,984** (GG AND DESIGN), **same, filed** Apr. 22, 1982, D.C., S.D. Fla. (Miami), Doc. 82-818-Civ-SMA, *Gucci Shops, Inc.* v *Leather World of Miami, Inc.*

Reg. No. 1,107,311. (See Reg. No. 1,107,259.)

Reg. No. 1,111,115 (MERRY GO ROUND AND DESIGN), Merry-Go-Round Enterprises, Inc., **filed** Apr. 23, 1982, D.C., S.D. Fla. (Fort Lauderdale), Doc. 82-6253-Civ-NCR, *Merry-Go-Round Enterprises, Inc.* v. *Merry-Go-Round Children's Wear, Inc., et al.*

Reg. No. 1,113,327. (See Reg. No. 588,852.)

Reg. No. 1,143,984. (See Reg. No. 1,107,259.)

Reg. No. 1,190,108 (DRIVE ON STALINGRAD), Simulations Publications, Inc.; **Reg. No. 1,191,251** (DRIVE ON WASHINGTON), **same, filed** July 7, 1980, D.C.N.J. (Newark), Doc. 80-2106, *Simulations Publications, Inc.* v. *Command Perspectives, Inc.* Stipulation of dismissal of action filed Nov. 24, 1980. **Same, filed** July 9, 1980, D.C.N.J. (Newark), Doc. 80-2118, *Simulations Publications, Inc.* v. *Command Perspectives, Inc.* Stipulation of dismissal of action filed Nov. 24, 1980.

Reg. No. 1,191,251. (See Reg. No. 1,190,108.)

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

Reissue, Reexamination, Protest and Examination Procedures in Patent Cases

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in patent cases (1) to eliminate consideration of the so-called "no defect" reissue applications, (2) to limit the participation by protestors during the examination of patent applications, (3) to reject and permit appeal to the Board of Appeals for failure to comply with the duty of disclosure rather than striking applications without appeal rights, and (4) to clarify the interface between patent application examination and patent reexamination in certain areas. These changes are intended to (1) reduce the prosecution costs of patent applicants, and (2) permit some of the Patent and Trademark Office resources now devoted to consideration of the so-called "no defect" reissue applications, and to extensive participation by protestors during application examination, to be directed toward reduction of the backlog of pending patent applications. The changes are also intended to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. The rule changes are further intended to clarify the interface between the duty of disclosure during patent application examination and the duty of disclosure during patent reexamination, as well as the treatment of concurrent reissue and reexamination proceedings on the same patent.

Effective Date: July 1, 1982.

For Further Information Contact: Mr. R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

Supplementary Information:

Background

A notice of proposed rulemaking was published in the Federal Register on Nov. 10, 1981, at 46 FR 55666-55672 and in the Official Gazette on Dec. 8, 1981, at 1013 O.G. 19-25. An oral hearing was held on Feb. 4, 1982. Forty-two written letters and statements were submitted. Fourteen persons testified at the oral hearing which resulted in 113 pages of testimony. Consideration was also given to the comments presented at the oral hearing on Apr. 16, 1981, relating to the proposed rules for implementing patent reexamination.

Objectives of Rule Change

The rule change is designed to adopt and implement Esuggestions from members of the public for changes in patent examination practice considered desirable in light of the implementation of statutory patent reexamination, contained in Public Law 96-517. Many of the persons who commented in writing and at the hearing held on Apr. 16, 1981, on the proposed rules for implementing patent reexamination favored modification of patent examination rules as amended herein. This rule change is designed to implement the suggestions received and, in particular, to reduce the prosecution costs of patent applicants by limiting the amount of participation by protestors during the patent application examination process.

The rule change also seeks to reduce the amount of time required by the Patent and Trademark Office to examine protested applications by limiting protestor participation. The technical expertise of the Patent and Trademark Office will continue to be available to make determinations of patentability on the basis of prior art

and related facts on an ex parte basis. However, the patent examiners in the Office are not trained as hearing examiners and have no substantial experience in handling inter partes matters. Under the rule change, protestor participation will be limited to the filing of papers in opposition to the grant of a patent with no Office communications to the protestor resulting therefrom beyond an acknowledgment of receipt of a protest or petition to strike in reissue applications. The opportunity to comment on Office actions and applicants' responses is eliminated. The rule change also intends to accomplish these purposes by eliminating the consideration of reissue applications not initially presented to correct defects pursuant to 35 U.S.C. 251.

The rule change is also designed to provide for review by the Board of Appeals of duty of disclosure issues which arise during patent application examination. This is accomplished by amending §1.56(d) to provide that the claims in an application be rejected if upon examination pursuant to 35 U.S.C. 131 and 132 it is found that applicant is not "entitled to a patent under the law" because of fraud or a violation of the duty of disclosure. The rejection would be made under the same conditions and circumstances previously used to strike an application, i.e., "clear and convincing evidence" of fraud or any violation of the duty of disclosure through bad faith or gross negligence. The statute, 35 U.S.C. 131, provides for examination of an application "and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent * * *" Section 132 of Title 35, United States Code, makes provision for the rejection of a claim for a patent as a result of the examination directed by 35 U.S.C. 131. While questions of fraud and violations of the duty of disclosure have historically been dealt with by the Commissioner through the mechanism of striking the affected application, there is no statutory requirement that the Commissioner act in that manner. Clearly the Commissioner can choose how, and by whom, the examination directed by 35 U.S.C. 131 can be made. 35 U.S.C. 132 authorizes a rejection in those circumstances where applicant is not "entitled to a patent under the law." The rule change simply modifies the mechanism and procedures which the Commissioner will use where the applicant is not "entitled to a patent under the law" because of failures to comply with §1.56(d).

The rule change is also designed to clarify the interface between patent application examination and patent reexamination in certain areas. The two areas involved are duty of disclosure and concurrent proceedings involving a patent under reexamination and for which a reissue application has been filed.

Sections 1.56, 1.106, 1.175, 1.193, 1.291, 1.555, 1.565, and 1.570 are amended to accomplish the purpose indicated above.

Discussion of Specific Rules

Access and Publication of Reissue Applications

The changes proposed in §1.11 are not being adopted since only one of the twenty-two comments favored the changes.

The publication of notices of the filing of reissues and provisions for public access to reissues will therefore continue as at present. Such publication eliminates the need for interested members of the public to periodically monitor the patent files to determine if a reissue application has been filed.

Amendments to §1.56

A large majority of the comments supported the amendments to §1.56. A number of comments questioned the advisability of having relatively inexperienced or non-attorney examiners handle questions of fraud or violation of the duty of disclosure. In response thereto, the amendments to the rule do not require that such questions be handled by the examiner who examines the application for questions of obviousness, enablement, etc. The Office presently plans to have questions of possible fraud or violation of the duty of disclosure examined by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Several comments suggested that the provisions for striking an application pursuant to existing paragraph (c) of §1.56 are inconsistent with the rejection for fraud or violation of the duty of disclosure contemplated in the amendment to paragraph (d). In response thereto, it is pointed out that paragraph (c) of §1.56 makes striking of the application discretionary with the Commissioner. It is thus more appropriate to retain this authority to strike the application in appropriate circumstances rather than to make it subject to a rejection. No inconsistency is seen between the different routes under paragraphs (c) and (d) of §1.56. Several comments were received indicating concern about the possible delay of a decision by the Board of Appeals pending consideration of a fraud or duty of disclosure question. In response to these concerns, it is pointed out that less time overall will be required by having the Board of Appeals consider the matter once rather than in a series of separate decisions. Further, expense to the applicant will be minimized by one appeal rather than two. The amendments to §1.56 are adopted as proposed except for some clarifying changes in paragraph (g).

Section 1.56 is amended by revising the title and paragraph (d), and by adding new paragraphs (e) through (i). The revision to the title and paragraph (d) provides for the rejection of claims upon examination pursuant to 35 U.S.C. 131 and 132 on the ground that applicant is not entitled to a patent under the law if it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies. Under amended paragraph (d), any rejection which would be made would include all the claims in the application.

The standards to be used in rejecting the claims under paragraph (d) as amended, would be the same as those utilized by the Commissioner in striking applications pursuant to present paragraph (d), i.e., clear and convincing evidence of fraud or any violation of the duty of disclosure through bad faith or gross negligence. Consistent with present practice, the revision of paragraph (d) looks to fraud or a violation of the duty of disclosure through bad faith or gross negligence with relation to the application under consideration or any previous application upon which the application relies.

The phrase "in connection with the application" is construed in the same manner as in the present unamended paragraph (d). For purposes of this section, a reexamination proceeding on a patent would be considered as being "in connection with the application" insofar as consideration of any subsequent reissue application is concerned. The phrase also includes within its scope the mere refiling of the subject matter of an application in another application without relying in the second application upon the first application. Thus, an appropriate rejection upon examination pursuant to 35 U.S.C. 131 and 132 based on conduct or actions proscribed by §1.56(d) could not be avoided merely by refiling the subject matter of the application in a second or subsequent application which did not rely upon the earlier application. The phrase "in connection with any previous application upon which the application relies" is intended to include all applications upon which the application under consideration relies, either directly or indirectly. For example, an application to reissue a patent obviously relies upon the application which resulted in the patent sought to be reissued. Likewise, continuation applications, continuation-in-part applications, and divisional applications also rely upon one or more parent applications.

New paragraph (e) of §1.56 normally delays the examination of an application for compliance with paragraph

(d) of §1.56 until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. Present plans are to have this examination on the question of fraud or violation of the duty of disclosure conducted by examiners with legal training assigned to the Office of the Assistant Commissioner for Patents. Paragraph (e), as added, would thus permit the resolution of issues arising under §1.56(d) to be delayed until consideration of such issues is necessary and appropriate. The practice under new paragraph (e) is generally consistent with present practice under paragraph (d) which normally delays the substantive resolution of fraud and duty of disclosure issues until other issues have been resolved in favor of applicant. Under new paragraph (e) an appeal would be suspended for examination pursuant to amended paragraph (d) of §1.56 once appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise ready for consideration by the Board of Appeals. If no questions of possible violation of §1.56 are raised or evident on the record before the examiner, no examination for compliance with paragraph (d) of §1.56 will be undertaken. New paragraph (e) provides for the reopening of prosecution of the application to the extent necessary to conduct the examination pursuant to amended paragraph (d) of §1.56 including any appeal pursuant to §1.191. New paragraph (e) also indicates that where an appeal has already been filed based on a rejection on other grounds, any further rejection under amended paragraph (d) will be treated in accordance with amended §1.193(c).

New paragraph (f) continues the present long standing practice whereby any member of the public can file a petition to strike an application from the files pursuant to paragraph (c) of §1.56. Such petitions are currently being filed without specific mention in §1.56. Under revised §1.56 petitions to strike an application for a violation of §1.56 are limited to violations of paragraph (c), with any violations of paragraph (d) being subject matter for rejection under paragraph (d). New paragraph (f) requires that any such petition alleging a violation of paragraph (c) which is entered in the application file must: (1) Be timely filed, (2) specifically identify the application to which the petition is directed, and (3) be served on the applicant or be filed with the Office in duplicate in the event service is not possible. New paragraph (f) does not specifically limit a "timely petition" to any particular point in the examination of the application. Such petitions will generally be considered "timely" if they are filed before final rejection or allowance of the application by the examiner. Whether or not a petition filed after final rejection or allowance of the application by the examiner is considered "timely" will depend upon the circumstances and the point in the prosecution at which the petition is submitted.

New paragraph (f) requires that the petition specifically identify the application to which the petition is directed. While an identification by application serial number is not essential, the identification must include enough specificity that the Office can determine with certainty the application to which the petition is directed. Paragraph (f) requires service of the petition on the applicant, or a duplicate copy in the event service is not possible, before the petition will be entered. While the Office might, in some circumstances, reproduce and serve a petition on the applicant, a member of the public would have no assurance that this would be done and, under paragraph (f), could not rely upon the Office doing so. Paragraph (f) also requires that any petition filed by an attorney or agent comply with §1.346.

New paragraph (g) of §1.56 assures a member of the public that a petition to strike an application for violation of paragraph (c) of §1.56 which meets the requirements of paragraph (f) will be considered by the Office. Language has been added to conform to additional language in §1.291(c). The Office will send petitioner an acknowledgment of the entry of a petition to strike in a reissue application file. However, the Office will not communicate with the member of the public filing such a petition in non-reissue applications, except for the return of any self-addressed postcard which was enclosed which merely acknowledges receipt of the petition. The member of the public filing the petition will not be permitted to contact the Office as to the disposition, or status, of the petition, or to participate in any Office proceedings relating to the petition. No further papers will be acknowledged or considered unless they raise new issues which could not have been earlier presented and thereby constitute a new proper petition. Mere arguments relating to the Office's decision on the petition or applicant's response to the petition would not qualify as a new proper petition. The disposition of the petition, once one has been filed, will, under paragraph (g), be an ex parte matter between the Office and the applicant. Paragraph (g) provides for communication by the Office with the applicant regarding a petition to strike the application which has been entered in the application file. Under new paragraph (g) the applicant could be required by the Office to respond to the petition. Any such response would be ex parte and would not be served on the member of the public filing the petition.

New paragraph (h) of §1.56 provides that any member of the public may seek to have the claims in an application rejected pursuant to the amended paragraph (d) of §1.56 by filing a timely protest in accordance with §1.291. New paragraph (h) also requires that any such protest filed by an attorney or agent seeking a rejection of claims pursuant to amended paragraph (d) of §1.56 must be in compliance with §1.346. One comment suggested that the last sentence of paragraph (h) is redundant since §1.346 applies without any specific mention. After careful consideration of the comment the sentence is being retained in order to emphasize and remind attorneys and agents of the obligations imposed by §1.346.

New paragraph (i) provides for the Office requiring the applicant to supply information pursuant to paragraph (a) of §1.56 in order for the Office to decide any issues relating to paragraphs (c) and (d) of §1.56, whether or not such issues arise as a result of a petition or a protest, or arise from other sources, e.g., an examiner discovering the issue while studing the application file. Any requirements for information under new paragraph (i) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under new paragraph (i) differs from past practice under which information was required, or requested, from applicant and one or more petitioners or protestors in some cases.

Rejection of Claims

Five comments were submitted relating to new paragraph (c) of §1.106. Two of the comments favored the paragraph as written and three recommended modification or clarification of the paragraph to ensure that it is not inconsistent with *In re Ruff, et al.*, 45 CCPA 1037, 118 USPQ 340 (CCPA 1958), and subsequent decisions. No modification or clarification of the paragraph is considered necessary since the intent of the paragraph was not to change current practice, but was merely to emphasize the importance placed on admissions and to make §1.106 more closely reflect current practice, which includes practice following *In re Ruff, et al.*, and subsequent decisions. The amendments to §1.106 are adopted as proposed.

Section 1.106 is amended to include a new paragraph (c) which emphasizes the importance placed on admissions by the applicant or the patent owner in a reexamination proceeding insofar as matters affecting patentability are concerned. Paragraph (c) includes a reference to the use of rejections based upon facts within the knowledge of the examiner as provided in §1.107. Paragraph (c) does not constitute a change in practice, but does result in §1.106 more closely reflecting current practice.

Reissue Oath or Declaration

Ten persons commented on §1.175. Four comments were received in support of the proposed change. Three of these favorable comments were from patent law groups. Of the six comments received opposing the change, two were from patent law groups. Eleven comments received at the Apr. 16, 1981, hearing on reexamination argued for retraction of the "Dann Amendments" which included §1.175(a)(4). Four comments at the Apr. 16, 1981, hearing favored retaining the "Dann Amendments". The arguments supporting the change were generally that paragraph (a)(4) was not necessary in view of the new reexamination procedure. The arguments opposing the deletion were generally that an inter partes practice before the Office is desirable from the standpoint of the judiciary and for a complete resolution of issues. After careful consideration of all of the arguments and the resources available in the Patent and Trademark Office, it is felt that the practice under paragraph (a)(4) of §1.175 should be discontinued and paragraph (a)(4) should be cancelled.

The numbering of paragraphs (a)(5) and (6) is not being changed. Proposed paragraph 1.175(a)(6) is being adopted as new paragraph 1.175(a)(7). The proposed wording is otherwise being adopted without change.

Amended §1.175 eliminates paragraph (a)(4). Under paragraph (a)(4), the Office gave advisory opinions on patentability over additional prior art without any changes in the patent claims. The courts have generally refused to give preclusive effect to these advisory opinions. See *PIC, Inc.* v. *Prescon Corp.*, 485 F. Supp. 1302, 205 USPQ 228 (D. Del. 1980), and *Rohm and Haas Co.* v. *Mobil Oil Corp.*, 525 F. Supp. 1298, 212 USPQ 354 (D. Del. 1981). Accordingly, in view of the implementation of patent reexamination pursuant to Pub. L. 96-517 it is appropriate to discontinue the advisory opinions provided pursuant to §1.175(a)(4). Under amended §1.175 an applicant for reissue of a patent will be required to file with the reissue application a statement under oath or declaration specifically averring a defect in the patent, e.g., "a defective specification or drawing," or an excess or insufficiency in the claims. Amended §1.175 also requires, in paragraphs (a)(5) and (a)(6), that applicant specify "errors" as opposed to "what might be deemed to be errors." Amended §1.175 effectively eliminates Office consideration of the merits of "no defect" reissue applications since any such "no defect" reissue applications filed after July 1, 1982, the effective date of the changes to §1.175, will not be examined as to questions of patentability. In addition, §1.175(a)(7) has been added to parallel the provisions in §1.65 requiring the same acknowledgment of the duty of disclosure in the oath or declaration of reissue applications as in the case of non-reissue applications.

Delay in Examination of Reissue Applications

Six comments were received relative to the proposed changes in §1.176. One comment supported, and five comments opposed, deleting the two month waiting period before action could be taken by an examiner in a reissue application. The opposing comments favored retaining the two month period to provide an opportunity for interested parties to submit information relating to the examination of a reissue application after notice of the filing thereof has been published in the Official Gazette. Since the notices under §1.11 will continue to be published, no need is seen to change §1.176. The proposed change is therefore not adopted.

Examiner's Answer

Only one comment was made relating to the proposed addition of paragraph (c) to §1.193. It suggested including a minimum time period for response in the rule. This suggestion was not adopted because in some circumstances it may be appropriate to set a shorter or a longer period for the reply brief. The amendments to §1.193 are adopted as proposed.

Paragraph (c) adds to §1.193 a provision that any decision rejecting claims pursuant to §1.56(d) in an application already on appeal from a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e). Prior to entering any such supplemental examiner's answer under paragagh (c), the Office may require information from applicant pursuant to paragraph (i) of §1.56. Under paragraph (c) of §1.193, the appellant may file a reply to the supplemental examiner's answer. Paragraph (c) provides that the appellant's reply to the supplemental examiner's answer will be considered and responded to as necessary with appellant being provided with an additional month, or such other time as may be set, within which to reply to any such response from the Office. After introduction of a supplemental examiner's answer pursuant to paragraph (c) and any replies and response thereto, the application will be forwarded to the Board of Appeals for consideration.

Protests by the Public Against Pending Applications

Fifteen persons commented on the proposed amendment of §1.291. Two persons suggested that protests be acknowledged by more than the return of a self-addressed postcard. The suggestion has been adopted to the extent of providing for an acknowledgment of the entry of a protest in a reissue application file to be sent to the member of the public filing the protest. The suggestion has not been adopted insofar as original applications are concerned since these applications are generally required to be kept in confidence under 35 U.S.C. 122. Further, the use of return postcards is an established method of receiving acknowledgment from the Office that a paper has been filed. By merely returning the postcard to a protestor in an application for an original patent and directing Office initiated communications solely to applicant, the amount of Office resources required will be minimized.

Several persons commented that the protest proceeding should be more inter partes. The weight of the comments received at the hearings held on Apr. 16, 1981, and Feb. 4, 1982, and in writing, favored ex parte proceedings. To ensure that the proceedings are essentially ex parte, a sentence is being added to paragraph (c) of §1.291, indicating that active participation by a member of public ends with the filing of the protest. To retain the inter partes nature of the protest would be contrary to the majority of the comments received and to one of the major purposes of the rule change, i.e., to reduce the amount of time spent by the Office in examining protested applications. The amendments to paragraphs (a) and (b) of §1.291 are adopted as proposed and paragraph (c) is being revised as indicated above.

Amended §1.291 continues to permit protests by the public against pending original and reissue applications. The protest may include any grounds which the member of the public filing the protest believes to be applicable.

Amended paragraph (a) of §1.291 provides for entry of a protest in the application file if the protest specifically identifies the application, is timely submitted, and is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate, in the event service is not possible. The comments made above in the discussion of new paragraph (f) of §1.56 regarding the timeliness of the filing or submission, specific identification of the application, and service on the applicant, are also applicable to the amendments of paragraph (a) of §1.291. The requirement that the Office acknowledge the filing of a protest is deleted from paragraph (a), but is covered in paragraph (c).

New paragraph (b) of §1.291 assures members of the public that a protest will be considered by the Office if (1) it specifically identifies the application to which it is directed; (2) it is timely submitted; (3) it is properly served upon the applicant in accordance with §1.248, or is filed with the Office the duplicate in the event service is not possible; (4) it includes a listing of the patents, publications or other information relied upon and a concise explanation of the relevance of each listed item; (5) it includes a copy of each listed patent or publication

or other item of information in written form, or at least the pertinent portions thereof; and (6) it includes an English language translation of all the necessary and pertinent parts of any non-English language document relied upon. It is considered desirable that §1.291 advise members of the public as to the contents which should be included in any protest since there will be no Office communications directed to the member of the public submitting the protest under paragraph (c). Thus, under paragraph (c) members of the public will not be given an opportunity to complete any protest which is incomplete. Amended paragraph (c) provides for the acknowledgment of the entry of a protest in a reissue application file.

Amended paragraph (c) of §1.291 provides that a member of the public filing a protest in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard acknowledging receipt of the protest. Amended paragraph (c) of §1.291 does not permit the member of the public filing the protest, or any other member of the public, to contact the Office as to the disposition, or status, of the protest or to participate in any Office proceedings relating to the protest. The disposition of the protest, once it has been filed will, under paragraph (c), be an ex parte matter between the Office and the applicant. However, applications which are open to the public may be inspected pursuant to §1.11.

Amended paragraph (c) provides for the Office to communicate with the applicant regarding any protest entered in the application file. Under paragraph (c), the applicant could be required by the Office to respond to the protest. Any response would be ex parte and would not be served on the member of the public filing the protest. Paragraph (c) provides for the Office to require applicant to supply information pursuant to pargraph (a) of §1.56 in order for the Office to decide any issues raised by the protest. Requirements for information under paragraph (c) will be ex parte in nature between the Office and the applicant. The ex parte nature of the requirements for information under paragraph (c) differs from past practice under which information could be required, or requested, from applicant and one or more protestors. Under amended paragraph (c), the active participation of the protestor ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest. Mere arguments relating to an Office action or an applicant's response would not qualify as a new protest.

Duty of Disclosure in Reexamination Proceedings

Only two comments were received relative to proposed §1.555. One comment argued that the Office should never ignore a violation of the duty of disclosure or leave it hanging. In response thereto, neither the statute nor the presently existing reexamination rules provide for reexamination on grounds other than those based on patents or printed publications. The second comment questioned whether a patent owner has a duty to cite new prior art after a request but prior to an order to reexamine. No further clarification of the section is necessary since §1.555(a) specifies when the patent owner should file a prior art statement in a reexamination proceeding. The amendments to §1.555 are adopted as proposed.

Amended §1.555 makes the duty of disclosure in reexamination proceedings more consistent with the duty of disclosure in patent applications. Paragraph (a) of §1.555 specifies that a duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner or involved employees of the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. This rule is consistent with the duty set forth in §1.56(a) insofar as patent applications are concerned, except that in paragraph (a) of §1.555 the patent owner is specified rather than the inventor as set forth in paragraph (a) of §1.56. This does not, however, impose the responsibility for compliance with the duty of disclosure on a corporate entity or organization but leaves the responsibility with involved individuals in the corporation or other organization. Paragraph (a) of §1.555 places a requirement on the individuals identified to bring to the attention of the Office patents or printed publications material to the reexamination which have not been previously made of record in the patent file and specifies how that should be accomplished.

Amended paragraph (b) of §1.555 essentially parallels existing paragraph (b) of §1.56 and makes similar provisions applicable to disclosures in reexamination proceedings.

Amended paragraph (c) of §1.555 provides that the duties of candor, good faith, and disclosure required in paragraph (a) of §1.555 have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding. The language of paragraph (c) refers to fraud or violation of the duty of disclosure in the reexamination proceeding since such conduct during the pendency of applications is covered by §1.56.

Amended paragraph (d) of §1.555 affirms that the responsibility for compliance with §1.555 rests upon the individuals identified in paragraph (a). Paragraph (d) also provides that no evaluation will be made in the reexamination proceeding by the Office as to compliance with §1.555. Paragraph (d) of §1.555 also provides that questions of compliance with §1.555 which are discovered during a reexamination proceeding will be noted as unresolved questions in accordance with present §1.552(c). Paragraph (d) will not preclude the patent owner from filing a reissue application to have questions of candor, good faith, and duty of disclosure considered and resolved, including such questions which arise during a reexamination proceeding, so long as the requirements of 35 U.S.C. 251 have been met. Paragraph (d) does not preclude suspension or disbarment proceedings under present §1.348 based upon conduct during a reexamination proceeding.

Concurrent Office Proceedings

Four comments were received on §1.565. One comment proposed adding a sentence at the end of paragraph (b) of §1.565 reflecting that reexamination would only be stayed in extraordinary situations. This suggestion has not been adopted since it is considered inappropriate to attempt to further define by rule the circumstances under which a stay of the reexamination may be appropriate. Two comments were received raising questions as to the treatment, during a merged reissue and reexamination proceeding, of broader claims which are present therein because of a reissue application which contained broadened claims. No clarification or change is necessary since the broadened claims are properly in the merged proceeding during the period it is merged. Such broader claims which are present in both the reissue and reexamination files during the pendency of the merged proceeding will be treated in accordance with the reissue statute and case law during the pendency of the merged proceeding. If the merged proceeding ceases to exist because of the abandonment of the reissue application, the claims in the reexamination file, including any broadened claims, will be examined in accordance with the reexamination statute and rules. Finally, one comment did not agree with merging reissue and reexamination proceedings because the merger is not seen to produce cost savings or other salutary results. One of the reasons for the merged proceedings is to ensure that claims of differing scope and inconsistent responses are not presented at the same time in different proceedings in the same patent. Moreover, since the proceedings are concurrent rather than sequential, a sig-

nificant savings in resources and overall pendency time may be realized by merging in many cases.

The amendment to §1.565 clarifies the proposed language of paragraph (b), eliminates from paragraph (b) the last two sentences relating to the treatment of concurrent reexamination and reissue proceedings, and adds a new paragraph (d) relating to this subject. The clarification in paragraph (b) is intended to avoid misinterpretations relating to stay determinations where concurrent litigation or reissue applications are involved.

Under new paragraph (d), which is consistent with the practice presently in effect under paragraph (b), if a reissue application and a reexamination proceeding on which an order pursuant to present §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the proceedings. New paragraph (d) also provides that where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with present §§1.171–1.179. The examiner, in examining the merged proceeding, will apply the reissue statute and case law, in addition to applicable provisions of §§1.171–1.179, to the merged proceeding. This is appropriate in view of the fact that the statutory provisions for reissue applications and reissue application examination include, *inter alia,* provisions equivalent to 35 U.S.C. 305 relating to the conduct of reexamination proceedings. New paragraph (d) of §1.565 makes clear that the patent owner must place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. Under new paragraph (d) of §1.565 the examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and will be physically entered into both files. New paragraph (d) also provides that any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent. The amendments to §1.565 are adopted with the changes or clarification indicated in paragraph (b).

Reexamination Certificate

Section 1.570, as amended, revises paragraph (e) to refer to new paragraph (d) of §1.565 rather than paragraph (b) in order to reflect the changes in §1.565.

No comments were received concerning the section and it is adopted without change.

Interim Procedures on Applications Pending on Effective Date

On July 1, 1982, the revised procedures of §§1.56(d) and 1.193(c) will apply to any applications then pending which have not been the subject of a final Office decision on questions of fraud or violation of the duty of disclosure. Any petition to strike an application from the files or any protest against a pending application filed prior to July 1, 1982, will be governed by the rules in effect prior to that date. Any applications filed under §1.175(a)(4) prior to July 1, 1982, will be examined until the application is amended and a reissue patent issues thereon or the application becomes abandoned. For a discussion of the interim practice in effect prior to July 1, 1982, see 1013 O.G. 18–19.

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

List of Subjects in 37 CRF Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers.

Amendment of Regulations

PART 1–RULES OF PRACTICE IN PATENT CASES

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Part 1 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 1.56 is amended by revising the heading and paragraph (d) and by adding new paragraphs (e) through (i) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(d) No patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence. The claims in an application shall be rejected if upon examination pursuant to 35 U.S.C. 131 and 132, it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon with the application relies.

(e) The examination of an application for compliance with paragraph (d) of this section will normally be delayed until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to §1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. The prosecution of the application will be reopened to the extent necessary to conduct the examination pursuant to paragraph (d) of this section including any appeal pursuant to §1.191. If an appeal has already been filed based on a rejection on other grounds, any further rejection under this section shall be treated in accordance with §1.193(c).

(f) Any member of the public may seek to have an application stricken from the files pursuant to paragraph (c) of this section by filing a timely petition to strike the application from the files. Any such timely petition and any accompanying papers will be entered in the application file if the petition and accompanying papers (1) specifically identify the application to which the petition is directed, and (2) are either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible. Any such petition filed by an attorney or agent must be in compliance with §1.346.

(g) A petition to strike an application from the files submitted in accordance with the second sentence of paragraph (f) of this section will be considered by the Office. An acknowledgement of the entry of such a petition in a reissue application file will be sent to the member of the public filing the petition. A member of the public filing such a petition in an application for an original patent will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the member of the public may include with the petition in order to receive an acknowledgement by the Office that the petition has been received. The Office will communicate with the applicant regarding any such petition entered in the application file and may require the applicant to respond to the Office on matters raised by the petition. The active participation of the member of the public filing a petition pursuant to paragraph (f) of this section ends with the filing of the petition and no further submission on behalf of the petitioner will be acknowledged or considered unless such submission raises new issues which

could not have been earlier presented, and thereby constitutes a new petition.

(h) Any member of the public may seek to have the claims in an application rejected pursuant to paragraph (d) of this section by filing a timely protest in accordance with §1.291. Any such protest filed by an attorney or agent must be in compliance with §1.346.

(i) The Office may require applicant to supply information pursuant to paragraph (a) of this section in order for the Office to decide any issues relating to paragraphs (c) and (d) of this section which are raised by a petition or a protest or are otherwise discovered by the Office.

2. Section 1.106 is amended by adding a new paragraph (c) to read as follows:

§1.106 Rejection of claims.

* * * * *

(c) In rejecting claims the examiner may rely upon admissions by the applicant, or the patent owner in a reexamination proceeding, as to any matter affecting patentability and, insofar as rejections in applications are concerned, may also rely upon facts within his or her knowledge pursuant to §1.107.

3. Section 1.175 is amended by revising paragraph (a) to read as follows:

§1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of the first sentence of §1.65, must also file with their applications a statement under oath or declaration as follows:

(1) When the applicant verily believes the original patent to be wholly or partly inoperative or invalid, stating such belief and the reasons why.

(2) When it is claimed that such patent is so inoperative or invalid "by reason of a defective specification or drawing," particularly specifying such defects.

(3) When it is claimed that such patent is inoperative or invalid "by reason of the patentee claiming more or less than he had the right to claim in the patent," distinctly specifying the excess or insufficiency in the claims.

(4) [Reserved]

(5) Particularly specifying the errors relied upon, and how they arose or occurred.

(6) Stating that said errors arose "without any deceptive intention" on the part of the applicant.

(7) Acknowledging a duty to disclose information applicant is aware of which is material to the examination of the application.

* * * * *

4. Section 1.193 is amended by adding a paragraph (c) to read as follows:

§1.193 Examiner's answer.

* * * * *

(c) Any decision pursuant to §1.56(d) rejecting claims in an application already under appeal of a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to §1.56(e), in which case appellant may file a reply thereto within two months from the date of the supplemental examiner's answer. Such reply will be considered and responded to as necessary. Appellant may file a reply brief directed to any such response within one month of the date of the response or within such other time as may be set in the response.

5. Section 1.291 is amended by revising the title, amending paragraphs (a) and (c), and adding paragraph (b), to read as follows:

§1.291 Protests by the public against pending applications.

(a) Protests by a member of the public against pending applications will be referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file if (1) the protest is timely submitted; and (2) the protest is either served upon the applicant in accordance with §1.248, or filed with the Office in duplicate in the event service is not possible.

(b) A protest submitted in accordance with the second sentence of paragraph (a) of this section will be considered by the Office if it includes (1) a listing of the patents, publications or other information relied upon; (2) a concise explanation of the relevance of each listed item; (3) a copy of each listed patent or publication or other item of information in written form or at least the pertinent portions thereof; and (4) an English language translation of all the necessary and pertinent parts of any non-English language patent, publication, or other item of information in written form relied upon.

(c) An acknowledgment of the entry of a protest under paragraph (a) of this section in a reissue application file will be sent to the member of the public filing the protest. A member of the public filing a protest under paragraph (a) of this section in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard which the member of the public may include with the protest in order to receive an acknowledgment by the Office that the protest has been received. The Office will communicate with the applicant regarding any protest entered in the application file and may require the applicant to supply information pursuant to paragraph (a) of §1.56, including responses to specific questions raised by the protest, in order for the Office to decide any issues raised by the protest. The active participation of the member of the public filing a protest pursuant to paragraph (a) of this section ends with the filing of the protest and no further submission on behalf of the protestor will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest.

6. Section 1.555 is revised to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

(c) The duties of candor, good faith, and disclosure required in paragraph (a) of this section have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding.

(d) The responsibility for compliance with this section rests upon the individuals identified in paragraph (a) of this section and no evaluation will be made in the reexamination proceeding by the Office as to compliance

with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with §1.552(c).

7. Section 1.565 is amended by revising paragraph (b) and adding paragraph (d) to read as follows:

§1.565 Concurrent office proceedings.

* * * * *

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or litigation, or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding.

* * * * *

(d) If a reissue application and a reexamination proceeding on which an order pursuant to §1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the two proceedings. Where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with §§1.171-1.179 and the patent owner will be required to place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. The examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

8. Section 1.570 is amended by revising paragraph (e) to read as follows:

§1.570 Issuance of reexamination certificate after reexamination proceedings.

* * * * *

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in §1.565(d) the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

* * * * *

Apr. 6, 1982

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

[FR Doc. 82-13613 Filed 5-18-82; 8:45 am]
BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of June 22, 1982

D. 261,925	4,302,381	4,313,591	4,321,897
4,209,421	4,303,228	4,314,010	4,322,217
4,213,095	4,303,451	4,314,068	4,322,821
4,219,556	4,303,880	4,314,090	4,322,893
4,220,449	4,303,893	4,314,192	4,322,949
4,230,770	4,304,707	4,314,476	4,322,997
4,244,557	4,306,379	4,314,580	4,323,103
4,252,278	4,306,621	4,315,308	4,323,216
4,259,205	4,306,916	4,315,310	4,323,832
4,262,938	4,306,968	4,315,662	4,323,891
4,263,160	4,307,432	4,315,793	4,324,208
4,264,283	4,307,483	4,316,053	4,324,355
4,268,225	4,307,713	4,316,207	4,324,470
4,270,443	4,308,066	4,316,555	4,324,496
4,271,784	4,308,115	4,316,775	4,324,616
4,276,094	4,308,331	4,316,994	4,324,675
4,278,010	4,308,429	4,317,207	4,324,736
4,278,695	4,308,857	4,318,060	4,324,750
4,282,024	4,309,787	4,318,603	4,324,847
4,285,972	4,310,615	4,318,624	4,325,458
4,289,740	4,310,646	4,318,876	4,325,489
4,297,413	4,310,827	4,319,221	4,325,571
4,298,547	4,310,943	4,319,238	4,325,627
4,298,770	4,310,978	4,319,253	4,325,815
4,299,449	4,311,096	4,319,476	4,325,817
4,300,079	4,311,566	4,320,644	4,325,899
4,300,310	4,311,775	4,321,122	4,328,381
4,300,350	4,312,001	4,321,198	4,328,443
4,301,043	4,312,407	4,321,304	4,328,640
4,301,542	4,312,584	4,321,401	4,329,589
4,302,084	4,312,802	4,321,592	4,329,648
4,302,117	4,313,283	4,321,652	
4,302,248	4,313,325	4,321,710	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 15, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-09-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-15-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-04-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-02-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-07-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-26-80

Expiration of patents: The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,181,175 to 3,186,003, inclusive

Plant Patents ..... Numbers 2,502 to 2,521 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,975

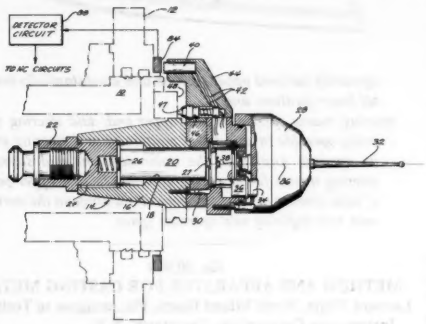
SPINDLE PROBE WITH ORBITAL TRANSFORMER

Richard E. Stobbe, Greenfield, and Richard Johnstone, Brookfield, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Original No. 4,145,816, dated Mar. 27, 1979, Ser. No. 853,764, Nov. 21, 1977. Application for reissue Nov. 10, 1980, Ser. No. 205,659

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—174 L **6 Claims**



1. A spindle probe for a machine tool having a spindlehead and having a spindle rotatably mounted on said spindlehead for rotation about a spindle axis, said spindle being adapted to receive a toolholder and said spindle probe comprising:

a toolholder adapted to fit in said spindle;

a probe element on said toolholder;

an oscillator within said toolholder;

means within said toolholder for energizing said oscillator;

means coupled between said oscillator and said means for energizing said oscillator for providing a completed electrical circuit path between said oscillator and said means for energizing said oscillator when said toolholder is inserted into said spindle;

means within said toolholder for altering the output of said oscillator when said probe element contacts a surface being measured;

a primary coil mounted on said toolholder and coupled to the output of said oscillator; and

a secondary coil mounted on said spindlehead adjacent to said toolholder to receive signals from said primary coil.

Re. 30,976

HONING MACHINE

William G. Wunder, Hamilton, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Original No. 4,136,488, dated Jan. 30, 1979, Ser. No. 828,475, Aug. 29, 1977. Application for reissue Apr. 28, 1980, Ser. No. 144,111

Int. Cl.³ B24B *5/36*

U.S. Cl. 51—58 **12 Claims**

1. A honing machine for honing an arcuate grooved surface that extends around the circumference of a cylindrical workpiece comprising:

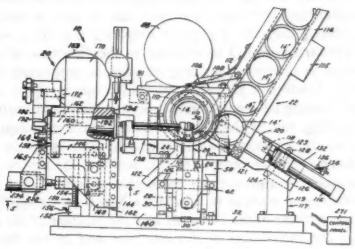
workpiece support means for rotatably supporting the workpiece in a workpiece support position in the machine for rotation about the axis of the workpiece;

spindle drive means for rotating the workpiece while it is being held by the workpiece support means;

oscillation assembly means for holding a honing stone having an arcuate honing surface in abrading engagement with the arcuate surface of the workpiece as the workpiece is rotated, the oscillation assembly means causing the honing stone to be oscillated back and forth as it is held in abrading engagement with the arcuate surface of the rotating workpiece, said oscillation assembly means including:

oscillating tool holder means for holding the honing stone as it is oscillated, the tool holder means oscillating with the honing stone;

non-oscillating tool holder mounting means for supporting the oscillating tool holder means, said tool holder mounting means permitting oscillation of the tool holder means relative thereto, the tool holder mounting means being movable in the honing machine between an engaged position, wherein the honing stone fits into the arcuate grooved surface of the workpiece in abrading engagement therewith, and a disengaged position, wherein the honing stone is moved out of the arcuate grooved surface in the workpiece for insertion and removal of successive workpieces into and out of the honing machine, the tool holder mounting means being pivotably mounted on a base member for pivotal movement with respect to the base member *about an axis parallel to the workpiece axis* in a direction perpendicular to the axis of the work piece, said movement moving the tool holder mounting means between its



engaged and disengaged positions, the tool holder mounting means including an [outer side] *upper plate that supports the oscillating tool holder means and a lower plate that carries the upper plate and an inner side* [on] *to* the base member [and an inner side] facing the workpiece support means, the [inner side] *lower plate* being positioned against the base member when the tool holder mounting means is in its engaged position, and the [inner side] *lower plate* being raised above the base member when the tool holder mounting means is in its disengaged position;

oscillation means for oscillating the tool holder means at least while the honing stone is in abrading engagement with the arcuate surface on the workpiece;

lift means for moving, upon actuation, the tool holder mounting means to its disengaged position to permit removal of the workpiece from the honing machine and insertion of a new workpiece into the machine, the lift means, upon deactuation, causing the tool holder mounting means to move back to its engaged position for honing the newly inserted workpiece, the lift means comprising lift cylinder means for raising the [inner side] *lower plate* of the tool holder mounting means with respect to the base member so as to move the tool holder mounting means between its engaged and disengaged positions for interchanging workpieces in the honing machine; and

control means for controlling the operation of the honing machine, said control means actuating and deactuating the lift means for insertion and removal of successive workpieces into and out of the machine.

Re. 30,977

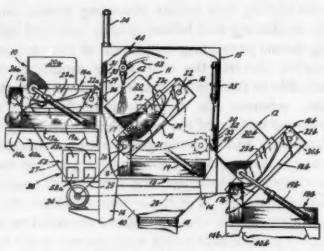
METHOD AND APPARATUS FOR DEFLASHING

Robert F. Zecher, Huntingdon Valley, Pa., assignor to Finmac Incorporated, Hatboro, Pa.

Original No. 4,115,960, dated Sep. 26, 1978, Ser. No. 791,726, Apr. 28, 1977. Application for reissue Feb. 14, 1980, Ser. No. 121,330

Int. Cl.³ B24B *31/00*

U.S. Cl. 51—422 **15 Claims**



16. In a method for [tumbling] *surface treatment of* objects *by tumbling the objects* upon an advancing *upwardly inclined* belt-like conveyor [to remove flash] *within a hopper positioned to enclose the conveyor*, the steps which include; so constraining the advancing belt-like conveyor that *at least* a portion of it [provides] *occupies a position providing* a surface which has such upward [slope] *inclination*, in the direction of conveyor advance, as to cause tumbling of objects supported upon said portion; loading a plurality of such objects upon said conveyor; causing advance of said conveyor in one direction while maintaining said [slope] *inclination*, with consequent tumbling of the objects [while the conveyor is in an elevated position] *within the hopper in said position*, for a period of time sufficient to remove flash from the objects; [and lowering said conveyor portion to a position] *and concurrently shifting both the position of the conveyor and the position of the hopper to change the inclination of the conveyor and of the hopper to a position* providing for discharge of said objects therefrom, while continuing the advance of said conveyor in said direction.

Re. 30,978

SELF-RIGHTING POWER-DRIVEN AQUATIC VEHICLE

Clayton J. Jacobson, 3500½ Highland, Manhattan Beach, Calif. 90266

Original No. 3,826,220, dated Jul. 30, 1974, Ser. No. 325,620, Jan. 22, 1973. Application for reissue Jan. 5, 1976, Ser. No. 646,860

Int. Cl.³ B63B *1/00*

U.S. Cl. 114—270 **7 Claims**

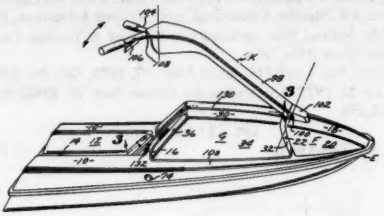
2. A power-driven aquatic vehicle comprising:

a hollow, elongated buoyant hull having a stern and a bow and defining an operator space adjacent said stern to accommodate the vehicle operator;

a jet pump mounted on said hull adjacent said stern;

an engine carried by said hull for operating said jet pump, said engine being located forwardly of said operator space, the weight of said engine and other components of the vehicle located forwardly of said operator space being sufficient, in the absence of a vehicle operator in said operator space, to dispose said bow deep enough in the water to offer greater resistance to passage through the water than said stern thereby to swing said bow to one side and cause said vehicle to circle, the weight of said engine and other components of the vehicle located forwardly of said operator space being sufficient to balance the weight of a vehicle operator and components located rearwardly of said operator space so that said vehicle tends to follow a straight path when said operator space is occupied by a vehicle operator;

an elongated steering arm having a lower end pivotally connected to said hull and an upper end movable between an



upwardly inclined upper position and a substantially horizontal lower position; and

steering means carried at said upper end, said steering means being operable in said lower position of said steering arm by an operator located in the water adjacent said stern, said steering means further being operable in said upper position of said steering arm by an operator standing on the portion of said hull defining said operator space.

Re. 30,979

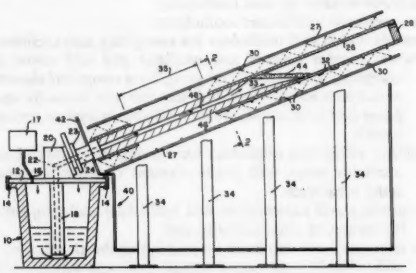
METHOD AND APPARATUS FOR CASTING METALS

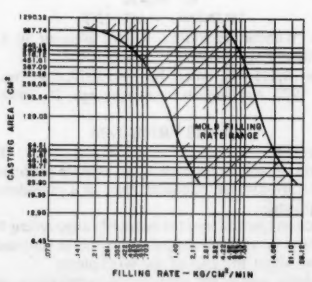
Leonard Watts, North Miami Beach, Fla., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Original No. 4,100,960, dated Jul. 18, 1978, Ser. No. 763,478, Jan. 28, 1977. Application for reissue May 5, 1980, Ser. No. 146,627

Int. Cl.³ B22D *18/04, 27/04*

U.S. Cl. 164—119 **12 Claims**





1. A method of casting a metal article in an elongated mold having a cross-sectional area substantially between 25.8 cm^2

and 967.74 cm^2, [a thermal conductivity of at least 0.20 $cal/cm^2/cm°C./sec.$,] and a length at least as long as the article to be cast, said mold having top and bottom portions comprising:

inclining said mold to the vertical;

introducing molten metal from a source through said bottom portion of said mold at a filling rate substantially between 0.239 $kg/cm^2/min.$ and 23.9 $kg/cm^2/min.$, the combination of filling rate and cross-sectional area of the mold being defined by the hatched area of the graph as shown in FIG. 3;

flowing molten metal along said mold by applying a differential pressure across said source and said top portion of said mold;

cooling the mold while regulating the flow of said molten metal therealong to form a solidified casting shell which[, during casting, occupies at least 40% of the cross-sectional mold area and] has a molten core;

flowing molten metal from said source to extend said casting shell and said molten core toward said top portion of said mold; and

subsequently solidifying said molten core *to produce a product having a relatively fine-grained structure throughout the cross-section thereof.*

PLANT PATENTS

GRANTED JUNE 22, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,859

SANSEVIERIA PLANT

Richard J. Naskali, Moscow, Id., assignor to Idaho Research Foundation, Inc., Moscow, Id.

Filed Jun. 2, 1980, Ser. No. 155,492
Int. Cl.[3] A01H *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Sansevieria plant substantially as shown and described.

4,860

VARIEGATED POINSETTIA NAMED V-14 JB

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ecke Ranch, Encinitas, Calif.

Filed Oct. 7, 1980, Ser. No. 194,756
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinctive variegated red and pink poinsettia plant, substantially as herein shown and described, distinguished by the pink flecks and streaks appearing in the overall red background of the bracts, and by the retention of substantially all of the physical and growth characteristics, except foliage and bract coloration, of its parent, Poinsettia V-14.

PATENTS

GRANTED JUN. 22, 1982

ERRATA

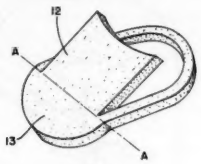
For CLASS	See PATENT NO.
441–069	4,335,478
464–052	4,335,585
464–081	4,335,586
294–142	4,335,839
029–399	4,336,093
376–245	4,336,103
376–249	4,336,104
060–644	4,336,105
524–053	4,336,166
523–451	4,336,167
524–300	4,336,168
523–511	4,336,169
521–055	4,336,170
524–510	4,336,171
524–555	4,336,172
524–512	4,336,174
524–726	4,336,175
524–310	4,336,176
523–201	4,336,177
523–206	4,336,178
523–145	4,336,179
524–847	4,336,180
523–501	4,336,181
524–416	4,336,182
524–095	4,336,183
523–179	4,336,184
548–562	4,336,194
549–462	4,336,195
549–416	4,336,196
549–331	4,336,197
549–259	4,336,198
549–496	4,336,199
549–466	4,336,202
524–770	4,336,367
373–085	4,336,411
373–110	4,336,412
372–162	4,336,506

PATENTS

GRANTED JUNE 22, 1982

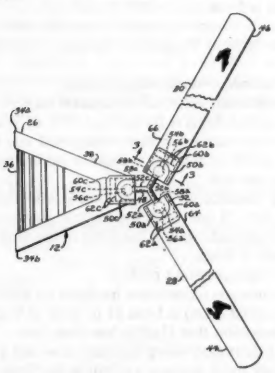
GENERAL AND MECHANICAL

4,335,471
HEADGEAR
Richard I. Quigley, Jr., and Penny P. Quigley, both of 1800 Windsor Dr., High Point, N.C. 27260
Filed Nov. 13, 1980, Ser. No. 206,460
Int. Cl.[3] A42B *1/20*; A61F *9/00*
U.S. Cl. 2—12 **5 Claims**



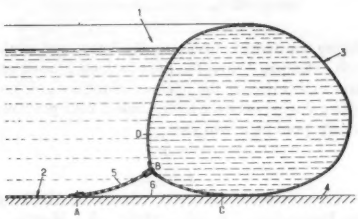
1. Headgear comprising: a resilient head encircling portion, a part of said encircling portion extending behind the wearer's head in a continuous manner from one side of the head to the other, said encircling portion contourable at least in part to the shape of the wearer's head, a display panel, said panel affixed to said encircling band, a visor portion, said visor portion integrally formed with said panel and pivotable therewith and said display panel pivotable from a prostrate to a raised position.

4,335,472
RETAINING ASSEMBLY FOR PROTECTIVE HEADGEAR
Frederick A. Rappleyea, Park Ridge, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Jun. 4, 1980, Ser. No. 156,247
Int. Cl.[3] A63B *71/10*
U.S. Cl. 2—421 **6 Claims**



1. A retaining assembly for protective headgear, comprising:
a chin cup for receiving the wearer's chin;
first and second straps having one end for attachment to the headgear;
a connecting member having three outwardly directed necks with an enlargement on the outer end of each neck; and
a housing on a side of said chin cup and on the other ends of said first and second straps, each of said housings having a cavity to receive one of said enlargements and an opening communicating with the associated cavity to receive one of said necks, with said openings being slightly smaller than the associated enlargement and sufficiently large to permit release of the associated enlargement under loads.

4,335,473
WATER RESERVOIRS, PARTICULARLY SWIMMING POOLS
Bernard de Pous, Villefranche de Lauragais, France, assignor to Zodiac, Saint-Cloud, France
Filed Jul. 16, 1980, Ser. No. 170,837
Claims priority, application France, Jul. 18, 1979, 79 18652
Int. Cl.[3] E04H *3/18*
U.S. Cl. 4—488 **5 Claims**

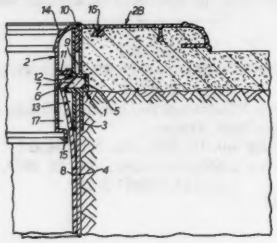


1. A liquid reservoir having a polygonal outer contour capable of resting on a supporting surface, comprising:
a. a flexible bottom;
b. side walls comprising at least one substantially straight inflatable tubular element extending along a closed contour defined by said bottom;
c. a peripheral connecting zone for connecting said bottom to said tubular element wherein said peripheral connecting zone risingly extends from a line on said bottom which is parallel to said tubular element but spaced apart therefrom to a generatrix located on said tubular element, said generatrix being situated between the lower-horizontal-tangency generatrix and the inner-bottomside-vertical-tangency generatrix of said tubular element; and
d. at least one brace extending from said line on said bottom to said lower bottom-horizontal-tangency generatrix of said tubular element.

4,335,474
SWIMMING POOL LINER SUPPORTS AND COPING
Howard S. Bailey, The Gables, 60 Turnpike Rd., Croesyceiliog, Cwmbran, England
Filed May 23, 1980, Ser. No. 152,917
Claims priority, application United Kingdom, May 24, 1979, 7918136
Int. Cl.[3] E04H *3/18*
U.S. Cl. 4—506 **8 Claims**

1. A swimming pool liner support comprising a vertically oriented first portion having a front and back surface corresponding to the front and back surface of the pool wall to which it is to be attached, the vertically oriented first portion being of shallow width between the front and back surfaces, the lower end of the first portion defining a slot to be positioned over the top edge of the pool wall, said first portion having a second slot extending opposite from said first slot, the front surface of the first portion defining a liner locking groove between said two slots for receipt of a top bead of the pool liner, a vertically oriented second portion also having a front and back surface and being of shallow width between the front and back surfaces, the two portions having mutually interlocking connection parts wherein the second portion will be interconnected to the first portion through said second slot and

adjacent said liner locking groove so that the two portions will extend substantially parallel to one another in a vertical direction, whereby differential curvature between the two portions is enabled when mounted on a pool wall defining a pool shape



exhibiting substantial curvature, the lower end of the second portion extending below the liner locking groove on the first portion so as to cover the opening of the locking groove and provide a slot between the lower ends of both portions through which the pool liner will pass.

4,335,475

COMPOSITE LOUNGE CHAIR STRUCTURE

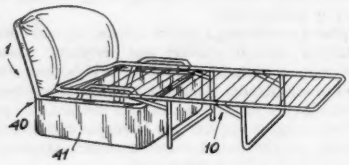
Pietro Damaschini, Via XXV Aprile, 35 - Muggio' (Prov. of Milano), Italy

Filed Jan. 2, 1980, Ser. No. 108,975

Claims priority, application Italy, Jan. 10, 1979, 20463/79[U]

Int. Cl.³ A47C *17/04, 17/22*

U.S. Cl. 5—14 **1 Claim**



1. A bed-convertible lounge chair structure, characterized in that it comprises a base body formed by tubular members, a backrest adapted for removable association with said base body such as to define a framework therewith, a cavity defined in said base body, a foldable bedspring arranged to be housed in a folded condition in said base body, a first covering portion on said framework and spanning said backrest and the side surface of said base body, a second covering portion spanning the seat, a backrest cushion inserted in said first covering portion, and a seat cushion inserted in said second portion, said base body comprising a closed configuration lower frame and a closed configuration upper frame and vertically extending uprights uniting said frames together at the corners thereof, said backrest comprising a tubular peripheral frame substantially of U-like shape having legs corresponding to the legs of the U-like shape and a peripheral frame portion corresponding to the bridge of the U-shape, said legs having distal ends remote from said peripheral frame portion and proximal ends connected to said peripheral frame portion, an interconnecting crosspiece at the distal ends of said peripheral frame legs and connected thereto, and tie rods extending between said crosspiece and said peripheral frame portion and transverse thereto, said peripheral frame of said backrest having lugs at the free ends of the legs thereof and at least those of said vertically extending uprights located on the rear of said base body having upwardly open cavities for removably receiving therein said lugs said base body defining thereby a space for receiving therein said foldable bed spring.

4,335,476

MATTRESS

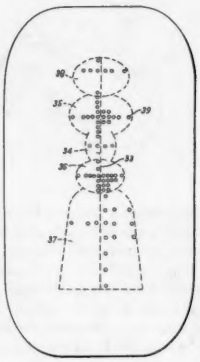
Bernard C. Watkin, 32 W. Square, London SE 11, England

Filed Mar. 6, 1980, Ser. No. 127,806

Claims priority, application United Kingdom, Mar. 8, 1979, 7908244

Int. Cl.³ A47C *27/14;* A61G *7/00*

U.S. Cl. 5—464 **9 Claims**



1. A mattress large enough to comprise a body-supporting surface of length 1.6 to 2.2 m having portions for supporting the waist, shoulders, hips and feet of the human body wherein the portions extend transversely of the longitudinal axis of the body-supporting surface and their indentation hardnesses to a depth of 6.1 cms are characterized as follows:

(a) in the waist-supporting portion

(i) the maximum indentation hardness on the longitudinal axis of the body-supporting surface (hereinafter called Wam) is from 100 to 250 N and

(ii) the indentation hardness along said axis does not fall below 96% of Wam for a distance extending at least 5 cms

(b) in the shoulder-supporting portion

(i) the minimum indentation hardness on said axis (hereinafter called Sam) is from 91 to 97% of Wam,

(ii) the indentation hardness along said axis does not exceed 103% of Sam for a distance extending for from 15 to 40 cms and

(iii) said distance of 15 to 40 cms commences at a point from 8 to 23 cms from the nearest point on said axis at which the indentation hardness of the waist-supporting portion is Wam,

(c) in the hip-supporting portion

(i) the minimum indentation hardness on said axis (hereinafter called Ham) is from 87 to 95% of Wam subject to the limitation that Ham is less than Sam

(ii) the indentation along said axis does not exceed 102% of Wam for a distance extending for from 7 to 35 cms and

(iii) said distance of 7 to 35 cms commences at a point from 12 to 32 cms from the nearest point on said axis at which the indentation hardness of the waist supporting surface is Wam and

(d) in the foot-supporting portion the indentation hardess is 95 to 150% of Wam at a point on said axis which is 90 cms from the nearest point on said axis where the indentation hardness in the waist-supporting portion is Wam, whereby the interrelationship between the resiliencies of the said portions are such as to support the body of a user lying on the mattress so that the user's spine is biased to an opti-

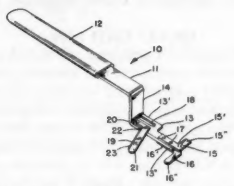
mum shape in which the majority of the thoracic vertebrae define a concave curve, the lumbar vertebrae define a convex curve and the sacrum and coccyx define a concave curve, the curves defined by the lumbar vertebrae and by the sacrum and coccyx being of greater curvature than the curve defined by the thoracic vertebrae.

4,335,477

CABLE TIE INSTALLING AND RELEASING TOOL

William M. Halstead, 5484 Cedar La., Apt. B-1, Columbia, Md. 21044

Filed Jul. 10, 1980, Ser. No. 168,313
Int. Cl.³ B26B *11/00*
U.S. Cl. 7—158 **9 Claims**



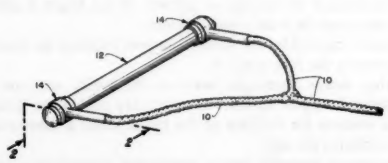
1. A tool for installing and releasing one-piece cable ties of the self-locking type including an elongated strap having a series of pawl engaging detents thereon, and a head connected integrally to one end of the strap, the head having an entry surface and an exit surface and a strap receiving opening therethrough, a pawl yieldably mounted in said head and inclined across said opening and being movable between a position in engagement with at least one of said series of pawl engaging detents and a disengaged position out of engagement with the pawl engaging detents, said tool comprising an elongated shank including a handle portion and a blade support portion forward of said handle portion, a thin flat primary blade including a base portion mounted on said blade support portion of said shank and a pawl release portion projecting from said base portion outwardly from said shank, said pawl release portion of said blade being narrower than the opening in said head and sufficiently thin to enter said opening and slide between said pawl and said pawl engaging detents on said strap so as to move said pawl to its disengaged position enabling said strap to be withdrawn from said head, and a cutter bar mounted on said shank behind said primary blade with a cutter blade portion projecting laterally from said shank for cutting said strap.

4,335,478

PROTECTIVE CAPS FOR WATER SKI TOW LINE HANDLE

Alan K. Pittman, 6644 Smoketree Ave., Agoura, Calif. 91301

Filed Jan. 30, 1980, Ser. No. 116,906
Int. Cl.³ A63C *11/10*
U.S. Cl. 441—69 **4 Claims**



1. In a waterski tow rope handle having an elongate handle and a tow rope passing through holes and encircling each end of said elongate handle, the improvement comprising:

a cup adapted to slip over and cover the ends of said handle including the encircling rope; said cup having a groove adapted to fit snugly on said rope encircling said elongate handle;

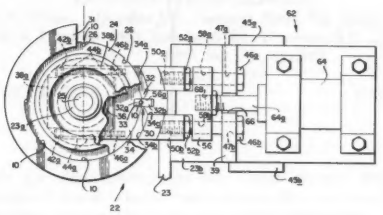
a sheath extending outward from the side of said cup and formed integrally therewith through which said rope passes whereby said cup is retained on said handle.

4,335,479

METHOD AND APPARATUS FOR MAKING BLIND RIVETS

Alton R. Copithorne, Rowley, Mass., assignor to Celus Fasteners Manufacturing, Inc., Andover, Mass.

Continuation of Ser. No. 908,722, May 23, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,299
Int. Cl.³ B21K *1/60*; B23P *11/00*; B21D *39/00*
U.S. Cl. 10—18 **11 Claims**



1. The method of making blind fasteners each having a flanged hollow body and a threaded mandril projecting from the body, said method comprising the steps of

A. positioning the threaded ends of a succession of mandrils in a corresponding succession of bodies,

B. automatically and continuously advancing the mandril-containing bodies in succession along a continuous track, having a direction of movement which is generally perpendicular to the longitudinal axes of the mandrils into the gap betwen no more than two spaced-apart die sections, the die sections being dimensioned so as to deform the body to have at most a preselected maximum diameter, and

C. moving the two die sections relatively toward one another along a direction substantially perpendicular to the axes of the mandrils and also perpendicular to the track when each body is in the gap so as to capture each body between them and to upset body material by means of a coining process into the threads of the associated mandril thereby staking the mandril in the body while simultaneously erecting a pair of stiffening ribs that project radially from the body at locations spaced from the body flange.

4,335,480

ELECTRIC ROTARY TOOTHBRUSH

Poo-Sung Liu, 2009 Hillview Rd., Lawrence, Kans. 66044

Filed Jul. 30, 1980, Ser. No. 173,530
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—23 **8 Claims**

1. An electric rotary toothbrush comprising:

a housing;

an electric motor mounted in said housing;

a brush drive shaft rotatably mounted in said housing;

a rotary brush rotatably mounted in said housing;

a first support means connected to said brush drive shaft for rotatably supporting one end of said rotary brush;

a second support means in said housing for rotatably supporting the other end of said brush;

a control means mounted on said housing and connected to said brush drive shaft for determining the axial position of said first support means; and

an opening in said housing in which said control means

moves, said opening having a first axial portion and a second transverse portion, said control means being positioned in said second portion of said opening to lock said

first support means into engagement with said rotary brush, and said control means movable in said first portion of said opening to disengage said first support means from said rotary brush.

4,335,481

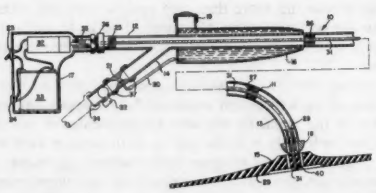
MOTOR DRIVEN WASHING, POLISHING WAND

Glen E. Slayman, 120 Pinkerton Dr., Beaver, Pa. 15009

Filed Apr. 17, 1980, Ser. No. 140,982

Int. Cl.³ A46B *13/04*

U.S. Cl. 15—29 **6 Claims**



1. A manually supportable washing and polishing wand which is operated in cooperation with a conventional water supply comprising:

(a) an elongated rigid tubular shaft having an operator end and a terminal end provided with a bend at the terminal end of said shaft;

(b) a rotary flexible disc positioned at the terminal end of said shaft and adapted to receive various contact appliances;

(c) a self-contained rotary power source located at the operator end of said shaft opposite said disc for supplying rotational drive force for said disc;

(d) a flow controlled fluid inlet connected to said tubular shaft near the operator end of said shaft for supplying fluid through said shaft to said disc;

(e) a reservoir supported on said shaft with means for communicating from the interior of said reservoir to the interior of said shaft;

(f) a plurality of bushings contained within said shaft;

(g) a flexible power cable connected at its one end to said rotary power source and at its other end to said rotary flexible disc and positioned coaxially within said tubular shaft by said bushings for transmitting rotational drive force from said power source to said disc while simultaneously allowing fluid flow longitudinally exterior to said cable and within said shaft; and

(h) means mounting the flexible rotary disc to provide freedom to swivel on the terminal end of said shaft.

4,335,482

ROTARY BRUSH MOUNTING

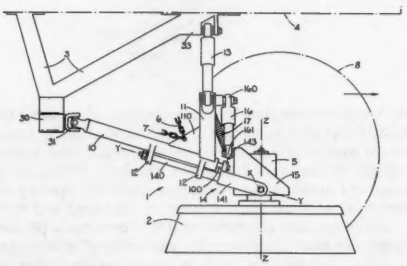
Peter A. Jones, March, England, assignor to Melford Engineering Limited, Cambridgeshire, England

Filed Jun. 19, 1980, Ser. No. 160,928

Claims priority, application United Kingdom, Jun. 19, 1979, 7921386

Int. Cl.³ E01H *1/04*

U.S. Cl. 15—87 **10 Claims**



1. For a mobile sweeping machine for sweeping road, pavement and similar surfaces, a mounting for a rotary brush rotatable about a substantially vertical axis in position of use wherein the mounting comprises:

bracket structure mountable from an underpart of the machine;

a swing arm mounted at one end by universal joint connection to the bracket structure for angular movement in generally horizontal and vertical planes and whereby said swing arm is non-rotatable about its longitudinal axis;

a first support member positioned at the other end of the swing arm and pivotally carried thereby about a longitudinal axis closely parallel with the axis of the arm;

a second support member pivotally carried by the first support member about a transverse axis intersecting the longitudinal axis of pivotal movement of the first support member in order to provide universal pivotal mounting of the second support member from the arm;

a downwardly directed rotary brush carried by and below the second support member and rotatable about a substantially vertical axis whereby back and forth and sideways inclination of the axis of rotation of the brush is able to take place in a universal manner;

a motor carried by the second support member for directly driving the rotary brush;

spring means connected between the swing arm and the second support member for yieldably urging the latter to a position for rotation of the brush about a substantially vertical axis; and

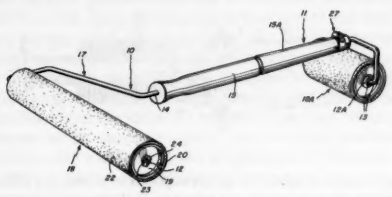
movement damping means connected between the swing arm and second support member for operation in conjunction with the spring means and for damping the universal pivotal movement which the second support member is otherwise able to freely follow in enabling the brush to closely follow varying surface formation in sweeping contact therewith in a self-accommodating manner.

4,335,483

TANDEM ROLLER DEVICES FOR APPLYING COATING LIQUIDS

Richard F. Buck, 41 Deer Hill Cir., Westbrook, Me. 04092

Filed May 12, 1980, Ser. No. 148,684
Int. Cl.³ B05C 1/08, 17/02
U.S. Cl. 15—230.11 4 Claims



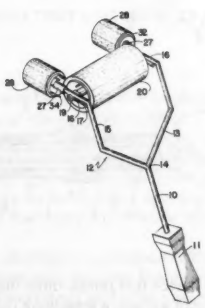
1. A tandem device for applying a coating to a surface, said device including primary and secondary rotatable members of which at least the primary member is a roller and the axial extent of the secondary member is substantially less than that of said roller, and means interconnecting said members with their axes parallel and spaced a substantial distance apart with said secondary member in the path of the primary member, said connecting means including member supporting end portions, the end portion for the primary member being in the form of a shaft entrant of said primary member from one end thereof, said connecting means including a handle portion extending between said members in a direction normal to said axes and in a position between the ends of the primary member and a length less than the distance between the members, said handle portion spaced above a plane inclusive of said axes and enabling, when both members are in contact with said surface, the only necessary working force to be applied in a direction substantially normal thereto, and said connecting means also including means enabling one of said members to be turned through an arc of at least 180° thereby to enable said device to be inverted to reverse the lay of the roller of its primary unit with the secondary member engageable with the surface and the handle portion spaced therefrom.

4,335,484

FENCE PICKET ROLLER PAINTER

Edward J. Ridge, 351 Ash St., and Graham H. Wilton, 180 Greenwood Ave., both of Winnipeg, Manitoba, Canada

Filed Jul. 28, 1980, Ser. No. 173,033
Claims priority, application Canada, Oct. 26, 1979, 338505
Int. Cl.³ B05C 9/04
U.S. Cl. 15—230.11 28 Claims



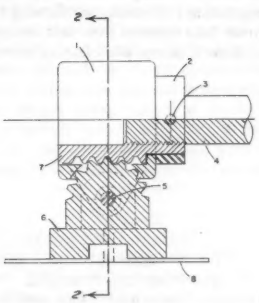
1. A paint roller assembly for fence pickets which include a front face, a rear face and two side edges; comprising in combination a handle assembly, a face engaging paint roller journalled for rotation within said handle component, a pair of picket-side-edge-engaging paint rollers journalled for rotation in said handle assembly in spaced apart relationship and being situated one adjacent each edge of said face engaging roller, with the axis of said side-edge-engaging rollers being situated normal to the axis of said face engaging roller and means cooperating between the edge-engaging rollers and the face engaging roller whereby rotation of said face-engaging roller, rotates said edge-engaging rollers, said face engaging roller being situated inboard of said edge-engaging rollers, said handle assembly including a pair of spaced apart leg portions, said face engaging roller being journalled for rotation between said spaced apart leg portions inwardly from the distal ends thereof, said side-edge-engaging rollers being journalled for rotation, one upon the distal end of each of said leg portions.

4,335,485

VARIABLE PITCH TROWELS

John N. Paine, 1 Douglas Dr., Newport News, Va. 23601, and Kim A. Lopdrup, 1101 Roseneath Rd., Florence, S.C. 29501

Filed Jan. 11, 1980, Ser. No. 111,342
Int. Cl.³ E01C 19/44
U.S. Cl. 15—235.8 6 Claims



1. A variable pitch trowel comprising a trowel face adapted to smooth concrete mix and the like, a handle assembly for said trowel face, and a pitch adjusting assembly attaching said handle assembly to said trowel face; said pitch adjusting assembly comprising a geared support structure which is secured to said trowel face, a worm thread cylinder which is secured to said handle assembly and engaged with said geared support structure and which is adapted to cause said worm thread cylinder, when axially rotated, to advance and retreat along said geared support structure, a pivoting outer housing which is secured to said geared support structure but free to pivot thereon and which is adapted to hold said worm thread cylinder in engagement with said geared support structure, and a pivoting means connecting said geared support structure to said pivoting outer housing.

4,335,486

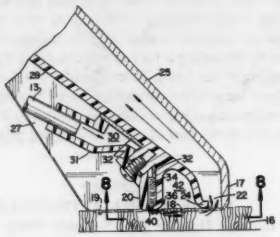
SURFACE CLEANING MACHINE

Werner W. Kochte, Ravenna, Ohio, assignor to The Scott & Fetzer Company, Twinsburg, Ohio

Filed Jan. 31, 1980, Ser. No. 117,263
Int. Cl.³ A47L 7/00
U.S. Cl. 15—321 11 Claims

7. A carpet cleaner comprising a head having a generally open bottom face, handle means for the head, a vacuum source, a cleaning fluid reservoir, said head including means for defining a cleaning zone extending across the width of the head at said bottom face, said head including cleaning fluid wipe-on means at said bottom face and extending across the width of the head on one side of said cleaning zone, said head including means for distributing and feeding cleaning fluid drawn from

said cleaning fluid reservoir along the extent of said cleaning fluid wipe-on means, said head including a vacuum uptake communicating with said vacuum source, said vacuum uptake being at said bottom face and extending across the width of the web on the other side of said cleaning zone from said cleaning



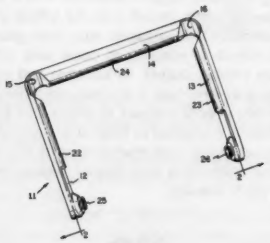
fluid wipe-on means, said cleaning fluid wipe-on means, cleaning zone, and vacuum uptake collectively being surrounded by front and side walls extending to the level of said bottom face, said walls cooperating to constrain air flowing to said vacuum uptake to entrain fluid supplied from said cleaning fluid wipe-on means and draw it across said cleaning zone.

4,335,487

SUPPORTING HANDLE

Michael A. DiPierro, Shrewsbury, Mass., and David E. Roche, Nashua, N.H., assignors to The Birger Company, Westboro, Mass.

Filed Jan. 8, 1980, Ser. No. 110,380
Int. Cl.³ A47B *95/02*
U.S. Cl. 16—126 **2 Claims**



1. A unitary plastic supporting structure comprising,

at least first and second rigid hollow portions of plastic material interconnected by a flexible solid portion of said plastic material,

said unitary plastic supporting structure being blow molded and formed with openings that surrounded needles during the blow molding process and having at least a third rigid hollow portion interconnected to said second rigid hollow portion by a second flexible solid portion of said plastic,

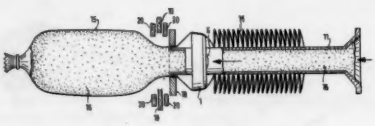
whereby said supporting structure may be formed into a U-shaped handle with said solid portions forming corners and said first and third portions having their free ends terminating in supporting means.

4,335,488

DEVICE FOR FILLING A SHIRRED TUBULAR CASING

Reinhold Becker, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,997
Int. Cl.³ A22C *13/00*
U.S. Cl. 17—33 **16 Claims**



1. Apparatus suitable for deshirring and smoothing a shirred tubular casing as the casing is being stuffed, the tubular casing having an interior surface of predetermined internal diameter when unshirred, comprising:

a hollow body of generally annular configuration having a circumferential wall of generally circular cross-section which defines a closed external surface having a diameter which increases from a first end to a maximum at a second end of the hollow body, the hollow body having a central opening for receiving a stuffing tube and means about said central opening for releasably engaging an external surface of the stuffing tube to mount the hollow body on the stuffing tube, the hollow body being constructed of a rigid material, and the maximum diameter of said external surface being smaller than the predetermined internal diameter of the unshirred tubular casing,

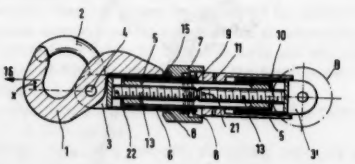
whereby when the hollow body is arranged within a deshirred section of the tubular casing, the tubular casing and the hollow body are mounted on the external surface of the stuffing tube, and the casing is stuffed with a mixture from the stuffing tube, the interior surface of the tubular casing slides over the generally circular external surface of the hollow body and is thereby deshirred and smoothed.

4,335,489

TENSIONING DEVICE, ESPECIALLY FOR LASHING CHAINS

Anton Müller, Aalen-Unterkochen; Martin Rauscher, and Günter Witzel, both of Aalen, all of Fed. Rep. of Germany, assignors to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,836
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1979, 2855988
Int. Cl.³ F16B *7/12*; E05C *19/10*
U.S. Cl. 24—68 CT **28 Claims**



1. A tensioning device that fulfills three functions including a coarse shortening of a chain, a tensioning thereof and a rapid opening thereof, especially for lashing chains having chain links in a chain strand of chain members, which comprises in combination: a housing, a double nut rotatably journalled over a part of the length thereof being protected in said housing, two link members for receiving chain links, at least one link

member having a receiving opening in which at least substantially each chain member of the chain strand can be connected, said link members being movable relative to one another and having a releasable latch means including a securing member associated with the receiving opening of at least one link member with which a chain member located in the receiving opening is to be secured, said securing member being mounted at least partially yieldably shiftable in a released position as journalled on the tensioning device, at least one of said link members having a fork-like shape with two freely projecting legs which extend parallel to one another and are interconnected by a transverse piece, said link members being adapted to be held in a closure position under tension, with at least one link member, under the force of a connected tensioned chain, being adapted to be movable rapidly into a release position, two spindles with a left thread and a right thread journalled in said double nut so that said spindles simultaneously can be adjusted oppositely relative to each other with said double nut including both tensioning and coarse shortening therewith, without any additional auxiliary tools, and an actuating element rigidly connected upon said double nut for rotation of said double nut, said spindles projecting with ends thereof away from each other out of said double nut and being provided at these ends with a connection link member providing one receiving opening for the chain member.

4,335,490

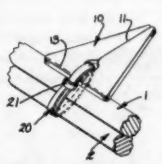
BAND AND CLIP ARTICLE

Donald O. Teachout, 1721 Bradford, NE., Grand Rapids, Mich. 49505

Division of Ser. No. 953,909, Oct. 23, 1978, Pat. No. 4,188,871. This application Oct. 24, 1979, Ser. No. 87,736

Int. Cl.³ A47B *97/00*; B65B *13/02*

U.S. Cl. 24—114.5 **10 Claims**



1. A clip for securing to a rubber band comprising: a generally flat triangular shaped plate made of a somewhat flexible material having a slot passing through said plate and extending from an apex of the triangle towards the opposite base thereof to a point nearer said opposite base than said apex, said slot having essentially no width when said plate is in an unflexed condition and at least some width when said plate is in a flexed condition.

6. A clip for securing to a common rubber band or the like comprising: a generally flat plate having opposed sides and a slot extending from one of said sides towards the other side; a projection projecting generally laterally, from the surface of said plate from a point located generally between the base of said slot and said other side of said plate whereby one can loop a rubber band or the like over said projection and pull it through said slot.

4,335,491

BELT-LOCK FOR A SAFETY BELT

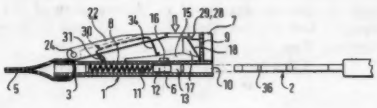
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,955

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923352

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **3 Claims**



1. Belt-lock and plug-in tongue for a safety belt comprising a lock-housing having a plug-in opening for insertion of a plug-in tongue, a movable spring-loaded latch disposed in said opening in the path of said plug-in tongue effecting locking of the inserted tongue, a slide member slideable in a guide in the lock-housing to move said latch out of engagement with said tongue to permit separation of the tongue from the belt-lock, a push-button mounted on the housing over the slide-member with pressure on the push-button activating the slide-member to slide and move the latch out of engagement with the tongue, a spring made of spring-wire disposed in the push-button with a bent portion of the spring banked at the lock-housing to effect an elastic, springy counter-action against pressure for the push button, and with the spring having a free, bent-spring ending abutting elastically against the slide member.

4,335,492

METHOD OF ALIGNING A COLOR TUBE CONE AND APPARATUS FOR CARRYING OUT THE METHOD

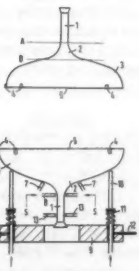
Peter Schmidt, Denkendorf; Otto Brunn, Wernau; Dieter Forker, Esslingen, and Willi Schmidt, Berglen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 14, 1979, Ser. No. 93,957

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850602

Int. Cl.³ B23Q *3/00*

U.S. Cl. 29—25.13 **5 Claims**



1. A method of aligning a colour tube cone of the type including a neck intended to house an electron-gun system, a funnel section having reference pads and a seal edge along the largest circumference, and a transition section which corresponds to the portion extending from the neck joint to the diameter of the funnel section where a deflection system is mounted on the finished tube, said method comprising the steps of:

aligning the circumferential seal edge and the reference pads

so that a plane defined by the seal edge is perpendicular to a longitudinal axis of the transition section; and

aligning the neck so that a longitudinal axis of the neck coincides with the longitudinal axis of the transition section.

4,335,493

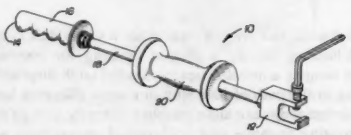
CUTTING TOOTH EXTRACTOR FOR STUMP CUTTING AND DIGGING APPARATUSES

Norman E. Shivers, Jr.; David E. Shivers, both of 121 W. El Segundo, Los Angeles, Calif. 90061, and Paul N. Shivers, 79 Patrician Way, Apt. 3D, Pasadena, Calif. 91105

Filed May 2, 1980, Ser. No. 146,063

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—254 **9 Claims**



1. An extractor for in situ removal of a stump cutting tooth removably mounted on a cutting wheel, said tooth having a head portion with a downwardly stepped land, the extractor comprising:

a slide hammer; and

a clamping device forwardly mounted on said slide hammer, said device including a screw, and a c-shaped frame having an open ended upper member opposed to an elongated base member, said upper member being provided with a threaded aperture to receive said screw and arranged to cooperate with a top surface of said head portion of said cutting tooth when inserted in said c-shaped frame; said elongated base member terminating in an upstanding leg of mating configuration and of sufficient height to substantially abut the entire adjacent face of said downwardly stepped land when said cutting tooth head portion is inserted in said c-shaped frame and said screw is drawn down to engage the top surface of said head portion of said cutting tooth; said upstanding leg of said elongated base being composed of a material having a Rockwell hardness in the range of from about 32 to about 40 which is relatively harder than the remainder of said c-shaped frame; wherein when said downwardly stepped land of said cutting tooth is clamped in said device, said slide hammer, when activated, exerts a sharp pulling force on said head portion of said cutting tooth to efficiently remove said tooth from the cutting wheel without distorting the original shape of said tooth.

4,335,494

METHOD OF ROLL FORMING A COMPOSITE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 783,988, Apr. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 587,346, Jun. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 184,044, Sep. 27, 1971, Pat. No. 3,889,348, which is a continuation-in-part of Ser. No. 814,885, Mar. 27, 1969, Pat. No. 3,608,183, which is a continuation-in-part of Ser. No. 573,148, Jul. 26, 1966, Pat. No. 3,437,783. This application Apr. 16, 1979, Ser. No. 30,340

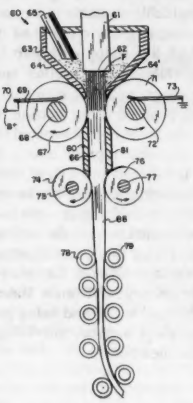
Int. Cl.³ B23P *15/00*

U.S. Cl. 29—420.5 **2 Claims**

1. A method for continuously shaping a weldable metal into a elongated member of substantially constant cross section comprising:

continuously feeding a heat and pressure weldable metal in a flowable particulate condition to die means which is operable to compress material fed through said die means and wherein such feeding is at such a flow rate to completely fill said die means as said weldable metal is feed therethrough,

compressing and resistance heating said weldable metal particles while in said die means so as to effect the fusion of said particles as they pass through said die means and the simultaneous welding of said particles into a non-porous solid mass while said metal is located within said die means so as to form a solid elongated shape defined by the shape of said die means, and



applying a driving force to said die means and the metal shaped thereby to cause the continuous formation of said non-porous solid shape and its movement out of and away from said die means to define said elongated member.

4,335,495

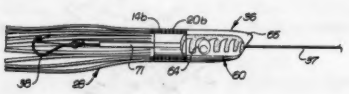
FISHING LURE FABRICATION, INCLUDING PATTERN APPLICATION

Beverly J. Buchanan, 3915 Bouton Dr., Lakewood, Calif. 90712

Continuation of Ser. No. 966,266, Dec. 4, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,520

Int. Cl.³ A01K *85/00*

U.S. Cl. 29—428 **28 Claims**



1. In the method of making a fishing lure, the steps that include:

(a) forming on a mandrel a first liquid resin tubular coating and at least partially curing said coating to provide a first sleeve,

(b) applying about one portion of the first sleeve full length a bond inhibitor liquid characterized as inhibiting bonding of liquid resin to said sleeve one portion,

(c) forming a second liquid resin tubular coating onto the first sleeve including said one portion thereof and at least partially curing said second coating to provide a second sleeve,

(d) transferring a predetermined pattern onto the exterior of at least one of said sleeves, said transferring step including relatively applying a pattern transfer sheet onto the exterior of said one sleeve, the transfer sheet having said pattern thereon, compressing said sheet against the exterior of said one sleeve at elevated temperature to effect the transfer of the pattern onto said one sleeve, and removing said sheet relatively away from said one sleeve,

(e) and slitting said sleeves lengthwise thereof and along said one portion of the length of the first sleeve, thereby to form loose strands associated with both sleeves, the strands associated with the first sleeve extending freely of the strands associated with the second sleeve.

4,335,496
METHOD OF COUPLING TWO CONCENTRICALLY DISPOSED MEMBERS

Hisanobu Kanamaru; Akira Tohkairin, both of Katsuta; Hideo Tatsumi, Mito, and Moisei Okabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

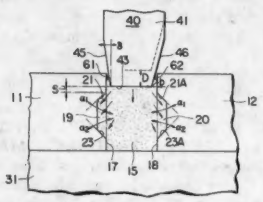
PCT No. PCT/JP79/00037, § 371 Date Oct. 22, 1979, § 102(e) Date Oct. 22, 1979, PCT Pub. No. WO79/00711, PCT Pub. Date Oct. 4, 1979

PCT Filed Feb. 19, 1979, Ser. No. 187,852

Claims priority, application Japan, Feb. 20, 1978, 53-17647; Mar. 29, 1978, 53-37251

Int. Cl.³ B21D *39/00*; B23P *11/00*

U.S. Cl. 29—520 **15 Claims**



1. A process of two coupling members in which a first member to-be-coupled and a second member to-be-coupled are coupled by non-elastically deforming a coupling member, comprising the steps of:

forming a concave portion on a coupling face of each member to-be-coupled, each concave portion having planar surfaces inclined to a flowing direction of the coupling member,

concentrically arranging the first and second members to-be-coupled with their coupling faces directed toward each other and a gap therebetween, a space being formed which comprises the two concave portions and the gap,

interposing in the space, a coupling member having a smaller deformation resistance than that of the members to-be-coupled, said coupling member being no more than slightly different in height than the height of said space, and

supporting one end of the coupling member and applying pressure on the other end by using a metal mould to force non-elastical flowing of a part of the coupling member into the concave portions until the flowed part tightly contacts with the inclined planar surfaces by pre-selecting the volume of the coupling member so as to satisfy the relationship:

$$0 \leqq S \leqq \tfrac{1}{3}b$$

where S is the length of a rubbing face of the members to-be-coupled by the coupling member in the pressure applying direction within the gap and b is the width of the gap in a direction at right angles to the rubbing direction,

whereby a mechanically strong combination which can transfer a large torque from one member to the other member is created.

15. A process of two coupling members in which a first member to-be-coupled and a second member to-be-coupled are coupled by non-elastically deforming a coupling member, comprising the steps of:

forming a concave portion on a coupling face of each member to-be-coupled, each concave portion having planar surfaces inclined to a flowing direction of the coupling member,

concentrically arranging the first and second members to-be-coupled with their coupling faces directed toward each other and a gap therebetween, a space being formed which comprises the two concave portions and the gap,

interposing in the space, a coupling member having a smaller deformation resistance than that of the members to-be-coupled,

providing a member around the members to-be-coupled so as to support against deformation thereof when pressure is applied to the coupling member, and

supporting one end of the coupling member and applying pressure on the other end by using a metal mould to force non-elastical flowing of a part of the coupling member into the concave portions until the flowed part tightly contacts with the inclined planar surfaces by pre-selecting the volume of the coupling member so as to satisfy the relationship:

$$0 \leqq S \leqq \tfrac{1}{3}b$$

where S is the length of a rubbing face of the members to-be-coupled by the coupling member in the pressure applying direction within the gap and b is the width of the gap in a direction at right angles to the rubbing direction,

whereby a mechanically strong combination which can transfer a large torque from one member to the other member is created.

4,335,497
TERMINATING APPARATUS

Daniel T. Casey, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 19, 1980, Ser. No. 122,539

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—566.2 **4 Claims**

1. An apparatus for terminating multiconductor flat cable with a connector having a housing preloaded with a plurality of terminals connected to a carrier strip, each terminal having a crimp portion exposed from said connector housing, a tine extending from an intermediate portion serving to initially stabilize said terminal, prevent its full insertion into said housing and align said cable with respect to said crimp portion, and a mating portion lying within said housing, said apparatus comprising:

a press having a vertically actuatable ram carrying crimp tooling on the lower end thereof, said crimp tooling having an elongated profile for simultaneously crimping both said crimp portion and said tine of each terminal of said plurality of terminals;

trough means defining a feed path extending transversely from a remote loading station to a work station beneath said ram;

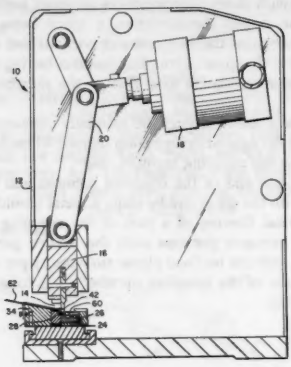
at least one connector carrying jig slidably mounted in said trough;

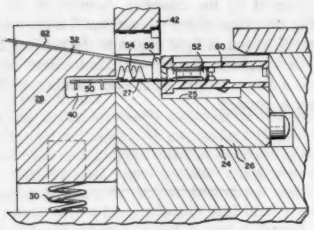
a cable support aligned with said ram and extending normally to one side of said trough; and

a shear bar intermediate said cable support and said trough forming one wall of the latter, said crimp tooling driving said shear bar with respect to said jig to effect shearing of said carrier strip from said terminals;

whereby said carrier strip is sheared from the plurality of terminals and each terminal crimped to a respective con-

ductor of a cable and said tines curled downwardly against said cable by actuation of said crimp tooling carried by said ram to both terminate said cable and allow full insertion of said terminals into said housing.





4,335,498

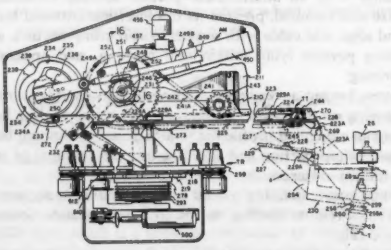
MACHINE TOOL

Robert Z. Hague, Oradell, N.J.; Matthew F. Marsicano, Forest Hills, and Edwin F. Hantman, New York, both of N.Y., assignors to Textron, Inc., Providence, R.I.

Filed Mar. 8, 1979, Ser. No. 18,628

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **9 Claims**



1. A machine tool comprising a vertical spindle having a toolholder socket, a moveable storage rack having a plurality of circumferentially spaced sockets for receiving and storing thereon a plurality of toolholders, means for indexing said storage rack to a position accessible for effecting the removal of a toolholder therefrom; an arm extending radially and substantially horizontal between said storage rack and said spindle, a toolholder carriage reciprocally mounted on said arm, a mechanical hand connected to said carriage, said hand having means for releaseably grasping a toolholder from said storage rack or spindle to remove it therefrom, and a drive means for effecting the drive of said carriage and mechanical hand carried thereby in an involute path toward and away from said spindle; said drive means including a first and second cylinder disposed in tandem, a piston mounted in each of said cylinders for dividing each of said cylinders into a pair of complementary expandable chambers, a common piston rod interconnecting said pistons, means for alternately directing an actuating fluid under pressure into one or the other of said complementary pair of expandible chambers of said first cylinder; means defining a closed hydraulic circuit connected between the expandible chambers of said second cylinder, said closed hydraulic circuit including a valveless vena contracta orifice interposed in said circuit between said other pair of complementary chambers, said vena contracta orifice having its smallest restriction free of any obstruction whereby the velocity of the piston rod responsive to the displacement of the piston due to the pressure of the actuating fluid thereon is determined by the free flow of fluid through said vena contracta orifice in said hydraulic circuit, a reservoir for containing a supply of said hydraulic fluid, and means connecting said reservoir in communication with the smallest restriction of said vena contracta orifice.

4,335,499

DEVICE FOR RAPID CHANGING OF TOOLS, PARTICULARLY ON LARGE-SCALE MACHINES

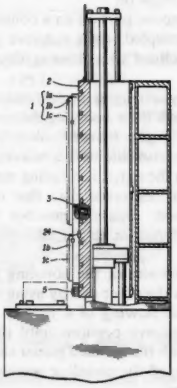
Serge Prat, Bures-sur-Yvette, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 12, 1980, Ser. No. 120,764

Claims priority, application France, Feb. 14, 1979, 79 03775

Int. Cl.³ B23Q *3/155*

U.S. Cl. 29—568 **5 Claims**



1. A device for rapidly positioning and securing a tool holder plate onto a machine slide comprising:

a plurality of clamping units;

a clamping head operatively associated with each of said clamping units;

elastic biasing means for effecting a clamping force disposed within each of said clamping units;

said machine slide having a plurality of cavities formed therein for accommodating each of said clamping units, respectively;

said tool holder plate having a plurality of T-channels formed therein for accommodating each said clamping head such that said T-channels are disposed within a plane parallel with said machine slide;

said tool holder plate further comprising a plurality of open-

ings formed therein and communicating with said T-channels, said openings having widths wider than said clamping heads for facilitating insertion and removal of said clamping heads into and out of said T-channels, said openings being coplanar with said tool holder plate;

a cylinder mounted within each of said cavities in said machine slide;

a clamping piston secured to each said clamping head and movably mounted within said cylinder such that activation of said cylinder via fluid pressure effects colinear movement of said clamping head with said piston in a direction perpendicular to said tool holder plate such that engagement and disengagement between said clamping head and said T-channel are effected by sliding said tool holder plate over said machine slide along said T-channels;

at least one positioning stop means operatively associated with said tool holder plate for aligning in a first direction the axes of said T-channels with said clamping heads;

at least one prepositioning stop means operatively associated with said tool holder plate such that abutment of said tool holder plate with said prepositioning stop means effects coaxial alignment in a second direction perpendicular to said first direction of each said clamping head with each corresponding said opening in said tool holder plate for allowing unobstructed insertion and removal of each said clamping head through each of said openings in said tool holder plate; and

at least one truing-up edge member operatively associated with said machine slide such that abutment of said tool holder plate with said truing-up edge member positions each said clamping head within said T-channels.

4,335,500

TOOL STORAGE MAGAZINE FOR MACHINE TOOL

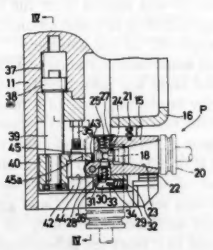
Kenichi Munekata, Kariya; Fumihiko Ohkoshi; Yoji Kamiya, both of Anjo, and Toshifumi Hasegawa, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 16, 1980, Ser. No. 197,674

Claims priority, application Japan, Oct. 22, 1979, 54-136807; Oct. 22, 1979, 54-146726[U]

Int. Cl.³ B23Q *3/157;* B23B *29/00;* A47F *3/08;* B23B *39/20*

U.S. Cl. 29—568 **3 Claims**



1. A tool storage magazine for a machine tool comprising:

a plurality of tool sockets, each for removably storing a tool therein, selectively indexable to a tool taking out position by rotation about a horizontal axis and pivotable at said tool taking out position;

a pair of engaging rollers rotatably supported by each of said tool sockets and located outside the side faces of each tool socket;

a hydraulic cylinder having a piston slidable in a vertical direction and a piston rod connected to said piston;

an engaging member securedly connected to said piston rod and formed with horizontally extending upper and lower portions in such a manner as to permit said pair of engaging rollers of each tool socket to pass therethrough while said plurality of tool sockets are rotated about said horizontal axis;

said lower portion of said engaging member being bifurcated to be aligned with said pair of engaging rollers of each tool socket at said tool taking out position and to form a space therebetween which is wider than the width of each tool socket.

4,335,501

MANUFACTURE OF MONOLITHIC LED ARRAYS FOR ELECTROLUMINESCENT DISPLAY DEVICES

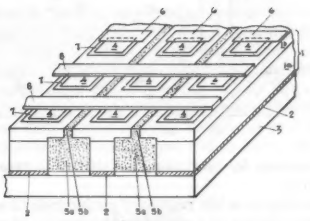
Dennis K. Wickenden, London, and Vera M. Vincent, Hatch End, both of England, assignors to The General Electric Company Limited, London, England

Filed Oct. 23, 1980, Ser. No. 200,257

Claims priority, application United Kingdom, Oct. 31, 1979, 7937678

Int. Cl.³ H01L *21/302, 21/316*

U.S. Cl. 29—569 L **10 Claims**



1. A process for the manufacture of a monolithic array of light-emitting semiconductor diodes, for an electroluminescent display device, which includes the steps of providing a slice of n-type semiconductor material, forming a plurality of discrete regions of p-type semiconductor material in the said slice by diffusing p-type material into the front surface of the slice, to delineate individual diode areas, forming individual metal contacts on the surfaces of said p-type regions and connecting said contacts together in groups as required for addressing the array, forming at least one isolation channel through the n-type slice for electrically isolating portions of the array from one another, forming at least one metal contact on a surface of the n-type region of each of said mutually isolated portions, and bonding the back surface of the structure so formed to an insulating substrate, wherein each said isolation channel is formed in two stages, the said process including the further steps of

(a) mounting the front surface of the slice of n-type materal on a first support layer,

(b) forming at least one initial channel from the back surface of the slice through a major part of the thickness thereof,

(c) filling each said channel with a suspension of glass powder particles in a liquid medium,

(d) removing the liquid from each channel so filled,

(e) heating the slice to a sufficiently high temperature to cause the glass particles in each channel to sinter so as to form a glass frit contained in the channel and bonded to the semiconductor material on each side of the channel,

(f) repeating said steps (c), (d) and (e) successively for the number of times required to fill each channel completely with said glass frit,

(g) mounting the back surface of the slice on a second support layer,

(h) removing said first support layer from the front surface of the slice,

(i) forming at least one further channel from the front surface of the slice, such that a said further channel is formed to correspond in position to each said initial channel and extending through the slice for a sufficient depth to meet the glass frit filling the said initial channel,

(j) and carrying out said steps (c), (d), (e) and (f) to fill each said further channel with said glass frit, to form at least one composite glass-filled channel consisting of a narrow front portion and a wider back portion,

the formation of each of said initial and further channels and filling thereof with said glass frit being caried out before the formation of the said contacts on the p-type and n-type regions of the slice.

4,335,502

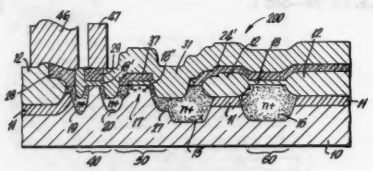
METHOD FOR MANUFACTURING METAL-OXIDE SILICON DEVICES

Paul Richman, St. James, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,872

Int. Cl.³ H01L *21/22, 21/283, 21/308*

U.S. Cl. 29—571 **11 Claims**



1. A process for fabricating an MOS structure comprising the steps of:

(a) forming mesa-like regions of predetermined width for the active regions of a circuit on the surface of a silicon substrate of a first conductivity type by growing thick field oxide regions which extend above and below the top surface of said mesa-like regions;

(b) forming a thin oxide layer over the surface of said mesa-like regions;

(c) etching said thin oxide layer so as to form openings in said thin oxide layer to expose said silicon substrate;

(d) forming a thick polysilicon layer over the entire surface of the structure resulting from step (c);

(e) depositing a layer of oxidation-retardant material on said polysilicon layer;

(f) etching said oxidation-retardant material and said polysilicon layer to expose preselected areas of said silicon substrate where sources, drains and diffused single crystal silicon interconnections are desired, but leaving said oxidation-retardant material at all such locations where contact holes are desired to the gates, sources, drains, and diffused interconnections;

(g) etching away any exposed portions of said thin oxide layer using the oxidation-retardant material protected polysilicon as a mask;

(h) etching away said oxidation-retardant material in selective locations exclusive of said contact hole locations;

(i) using said oxidation-retardant material as a mask, doping exposed portions of said polysilicon layer and said silicon substrate with impurities of a second conductivity type to form at least one single crystal diffused portion on said silicon substrate; and

(j) growing a thick insulating oxide layer which extends above and below portions of the top surfaces of all polysilicon regions and top surfaces of said mesa-like regions where a contact hole is not desired, said thick insulating oxide layer forming a relatively flat top surface.

3. The process of claim **1**, wherein the oxidation-retardant material of step (e) is silicon nitride, the process further comprising the steps of:

(k) removing said oxidation-retardant material from the locations where a contact hole is desired; and

(l) doping the polysilicon exposed by removal of said oxidation-retardant material with phosphorus.

4. The process of claims **2** or **3**, wherein there is further provided the step of depositing metallic material on the portions of the substrate where a metal contact is desired.

4,335,503

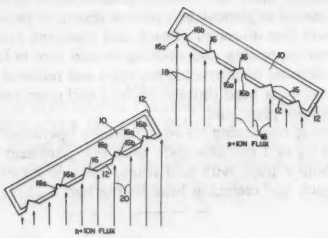
METHOD OF MAKING A HIGH VOLTAGE V-GROOVE SOLAR CELL

John C. Evans, Jr., Ravenna; An-Ti Chai, N. Ridgeville, and Chandra P. Goradia, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 219,678

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **7 Claims**



1. A method of making a solar cell of the type comprising a plurality of discreet voltage generating regions formed within a single semiconductor body of one conductivity type having oppositely disposed surfaces said voltage generating regions being connected together so that their output voltages are additive; said method comprising:

forming a plurality of V-shaped grooves in one of said surfaces of said semiconductor body, each of said grooves being short of and spaced from the oppositely disposed surface and including first and second faces arranged in an angle of about 90° to one another;

orienting said semiconductor body to a first position wherein said second faces are substantially parallel to a first ion flux thereby implanting ions of a first conductivity type into the said first faces of said grooves so as to form a doped region of said first conductivity type therein while said body is oriented in said first position so that substantially none of said ions from said first ion flux are implanted in said second faces of said groove; and

orienting said semiconductor body to a second position wherein said first faces are substantially parallel to a second ion flux thereby implanting ions of an opposite conductivity type into the said second faces of said grooves so as to form a doped region of the opposite conductivity type therein with said body oriented in said second position so that substantially none of said ions from said second ion flux are implanted in the said first faces of said grooves;

pairs of oppositely disposed doped regions of adjacent grooves in said semiconductor body being spaced apart by gaps comprising unimplanted regions of semiconductor material located between the adjacent grooves, said pairs of oppositely doped regions forming voltage generating unit cells and said method further comprising providing metallization in said grooves to connect together adjacent ones of said unit cells.

4,335,504

METHOD OF MAKING CMOS DEVICES

Steven N. Lee, Irvine, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 24, 1980, Ser. No. 189,884
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—576 B 17 Claims

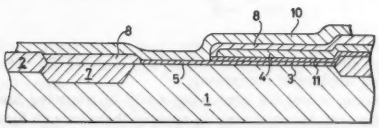
1. A method of making complementary n-channel and p-channel metal oxide semiconductor (CMOS) device pairs in a common insulatively supported semiconductor layer, including simultaneously converting by exposure to a conductivity-type-determining ion beam adjacently arranged complementary regions in different members of a device pair in said layer from a first to a second conductivity type.

4,335,505

METHOD OF MAKING SEMICONDUCTOR MEMORY DEVICE HAVING MEMORY CELL ELEMENTS COMPOSED OF A TRANSISTOR AND A CAPACITOR

Hiroshi Shibata, Kawasaki, and Tatsuya Enomoto, Itami, both of Japan, assignors to VLSI Technology Research Association, Kawasaki, Japan

Filed Dec. 26, 1979, Ser. No. 107,285
Claims priority, application Japan, Dec. 26, 1978, 53-163807
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—577 R 7 Claims



1. A method for producing a semiconductor memory device including multiple memory cell elements, each cell being composed of a transistor and a capacitor, comprising the steps of:

providing a substrate of silicon having a first conductivity type;

forming a first thick layer of oxide on a surface of said substrate in a predetermined pattern for providing separation between adjacent memory cell elements;

thermally oxidizing exposed portions of said surface of said substrate to form a layer of thermal oxide;

depositing a layer of silicon nitride over said layer of thermal oxide and said thick layer of oxide;

depositing a first layer of polycrystalline silicon over said layer of silicon nitride;

forming a layer of photoresist over said layer of polycrystalline silicon in a predetermined pattern;

removing portions of said first layer of polycrystalline silicon exposed through apertures in said layer of photoresist;

irradiating said substrate at a non-perpendicular angle through apertures in said photoresist layer;

removing said photoresist layer and predetermined remaining portions of said layer of thermal oxide;

providing impurities having a second conductivity type to portions of said substrate exposed through said steps of irradiating;

removing said layer of polycrystalline silicon in predetermined regions so as to form bit lines for each memory cell and opposing electrode of each said capacitor;

oxidizing exposed regions of said substrate and said layer of polycrystalline silicon to form second thick oxide layers;

forming a layer of metal over uppermost layers or said surface of said substrate; and

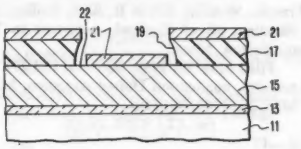
etching said layer of metal to form connection lines to each said memory cell.

4,335,506

METHOD OF FORMING ALUMINUM/COPPER ALLOY CONDUCTORS

George T. Chiu, Wappingers Falls; Robert R. Joseph, Poughkeepsie, and Gunars M. Ozols, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,102
Int. Cl.³ H01L *21/283, 21/308*
U.S. Cl. 29—591 8 Claims



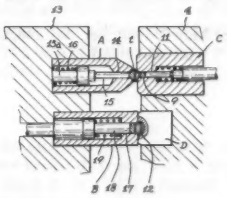
1. A process for forming an aluminum/copper alloy, electromigration resistant electrical conductor comprising forming a patterned layer of copper on a layer of aluminum on a substrate, removing the auminum which is not masked by the patterned copper layer by reactive ion etching in a chlorine-containing atmosphere without supplementary heating of said substrate, and then heating to cause the copper to diffuse into and throughout said aluminum layer, and to alloy with the said aluminum layer.

4,335,507

METHOD FOR MAKING A TRI-METALLIC COMPOSITE ELECTRICAL CONTACT

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Japan

Division of Ser. No. 926,874, Jul. 24, 1978, Pat. No. 4,232,812.
This application Aug. 7, 1980, Ser. No. 176,256
Claims priority, application Japan, Jul. 25, 1977, 52-88258
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—876 2 Claims



1. A method of fabricating a tri-metallic electrical contact material by cold pressing, comprising

placing a plurality of cut wires in axial alignment, while firmly sustaining the confronting end portions of a first pair of said aligned wires in a first cavity, pressing with a first punch the confronting end portions of a second pair of said aligned wires, which last-named end portions are disposed exteriorily of said first cavity, for causing plastic deformation between said confronting end portions of said second pair of said wires at the exterior of said first cavity, thereby to cold press said last-named end portions together along a first seam,

transferring said aligned wires in alignment with a second punch having a cavity, while the confronting end portions of said first pair of wires are kept in said first cavity, and

moving said second punch and said first cavity one with respect to the other for pressedly inserting said first seam and said confronting end portions of said second pair of aligned wires into said second punch cavity and firmly sustaining them therein while releasing said confronting

end portions of said first pair of aligned wires from said first cavity, and simultaneously causing plastic deformation in said confronting end portions of said first pair of aligned wires at the exterior of said first and second punch cavities, thereby finally to cold press together the confronting end portions of said first pair of wires along a second seam.

4,335,508

SAFETY RAZOR HEADS

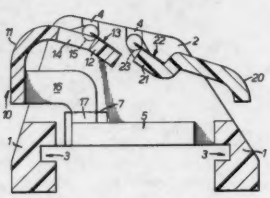
John F. Francis, Woking; Bryan R. Kirk, Tadley, and John C. Terry, Reading, all of England, assignors to The Gillette Company, Boston, Mass.

Filed May 22, 1980, Ser. No. 152,271

Claims priority, application United Kingdom, May 25, 1979, 7918270; Mar. 26, 1980, 8010134

Int. Cl.³ B26B *21/06*

U.S. Cl. 30—47 **3 Claims**



1. A tandem blade safety razor comprising a frame, a guard member, a leading blade fast with said guard member and having a cutting edge, a cap member, a following blade fast with said cap member and having a cutting edge, and pivotal mounting means mounting said respective members in said frame for independent angular movement about respective axes parallel with said cutting edges.

4,335,509

BEARD AND MOUSTACHE TRIMMER

Sarah L. Smith, 20710 Rosedale St., St. Clair Shores, Mich. 48080

Filed May 9, 1980, Ser. No. 148,329

Int. Cl.³ B26B *21/06*

U.S. Cl. 30—48 **4 Claims**

3. A hair trimmer with an unguarded cutting edge, particularly adapted for grooming and shaping beards, moustaches, sideburns and the like, comprising:

an elongated handle;

a unitary blade and shank, the shank thereof being about the same width as the handle, one end portion of the shank aligned with the axis of the handle and attached to an end portion of the handle, the remaining portion of the shank extending obliquely from the other shank portion to a union with the blade, said blade appending angularly downward from the union with the shank towards the handle to an unguarded cutting edge at the other end portion of the blade having an oblique relationship to the union of the blade and shank and extending across the full width of the blade, said width being substantially greater than the width of the shank whereby the ends of the cutting edge extend beyond the sides of the shank and are exposed for the view and use of a user;

a means for steadying the hand of the user and controlling the pressure of the cutting edge against the surface in contact with the cutting edge; and

a means for attaching the shank to the handle.

4,335,510

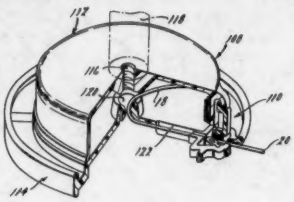
STRING TRIMMER

Albert R. Close, Culver City, and Winton Oster, Venice, both of Calif., assignors to Black & Decker, Inc., Newark, Del.

Continuation of Ser. No. 160,537, Jun. 18, 1980, abandoned. This application Oct. 22, 1980, Ser. No. 199,563

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **9 Claims**



1. A head for a trimmer using flexible trimming line as the cutting implement comprising:

housing means for containing a coil of trimming line, said housing means having an opening therethrough for egress of said trimming line, said opening being disposed in communication with the center of said coil so that said trimming line can be fed from the center of said coil through said opening to project the free end of said trimming line generally radially-outwardly from said housing means, said housing means being adapted to be rotated at high speed to rotate said coil and the generally radially-outwardly projecting free end of said trimming line therewith; and

clamping means associated with said housing means for securing said trimming line during rotation of said housing means and for releasing said coil through said opening without rotation of said coil said clamping means comprising;

a button member which is manually movable with respect to said housing means for releasing and clamping said trimming line;

a clamping member resiliently biased in a direction to cause clamping of said trimming line and which is movable against said resilient bias when said button member is manually moved to release said trimming line; and

pivot means for permitting rotation of said clamping member about said pivot means in one direction to clamp said trimming line.

4,335,511

DRY WALL OUTLET BOX LOCATOR AND CUTTER ASSEMBLY

Dan P. Bowling, 2625 Colt Rd., Rancho Palos Verdes, Calif. 90732

Filed Jan. 28, 1980, Ser. No. 115,914

Int. Cl.³ B26F *1/00*

U.S. Cl. 30—366 **4 Claims**

1. A device for registering the center of a framing supported electrical outlet box by an identation on a sheet of wall board when the latter is moved temporarily to the position it will permanently occupy when secured to said framing, said outlet

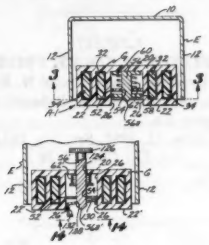
box of the type that includes a back from which a pair of end walls and sidewalls extend forwardly to terminate in a pair of horizontal and vertical edges, said back, end walls and sidewalls cooperating to define a confined space, said device including:

a. a horizontally positionable plate of less length than the width of said confined space and removably disposable in the latter;

b. a pair of laterally spaced projections that extend forwardly from said plate;

c. first and second pairs of legs slidably movable in first and second pairs of vertical openings in said pair of projections, said legs having first ends;

d. first and second grippers supported from said first ends of said first and second pairs of legs;



e. first springs means that tend to move said grippers away from one another into gripping contact with said pair of end walls;

f. a prong that has a pointed forward end;

g. first means between said pair of projections for slidably supporting said prong for movement normal to said plate;

h. second means that tend to maintain said prong in a first position where said pointed end is disposed rearwardly of said pair of projections; and

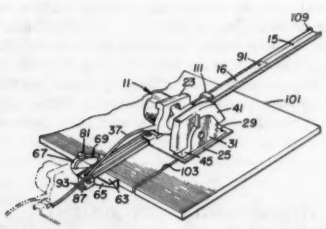
i. third means for moving said prong forwardly for said pointed end to form said indentation on said wall board as a guide to subsequently cut an opening in said wall board in alignment with said outlet box.

4,335,512

ATTACHMENT FOR A POWER HAND SAW

Martin I. Sheps, Poway; George S. Christensen, San Diego, and George E. Robson, Hermosa Beach, all of Calif., assignors to Portalign Toll Corporation, San Diego, Calif.

Filed Jul. 17, 1980, Ser. No. 169,863
Int. Cl.³ B27B *9/04*
U.S. Cl. 30—376 **12 Claims**



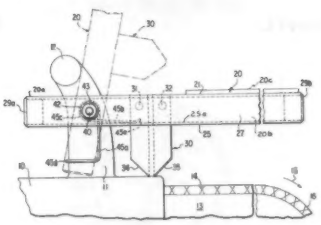
1. In a device for facilitating repeated cuts with a portable hand-held power saw having a saw shoe bearing surface, and wherein relatively slideable guide means are employed for guiding the saw through a cutting path, the improvement wherein said guide means comprise a first elongated slide having a flat surface adapted to lie against the surface of a work-piece, said guide means further comprising a second elongated slide movable on said first slide with respect thereto, a relatively thin mounting plate adapted for attachment to the saw shoe, means for attaching said mounting plate to said second elongated slide such that said mounting plate lies against the work-piece and at a position laterally offset from said first elongated slide, and spring means providing a substantially constant force against movement of said second elongated slide relative to said first elongated slide in the direction of the saw cut.

4,335,513

SAFETY BAR FOR USE WITH CHAIN SAW OR THE LIKE

James L. Owens, 4210 Stoneybrook Rd., Clemmons, N.C. 27012

Filed Aug. 25, 1980, Ser. No. 180,888
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—382 **9 Claims**



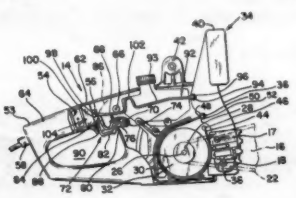
1. In combination with a chain saw having a housing and an endless cutting chain supported by the housing, an elongated, tubular bar, means for pivotally mounting said bar with respect to said housing so that, in a lowered position thereof, the bar extends in the plane of the cutting chain substantially parallel to and above the chain, means disposed within the tubular bar for biasing said bar toward the lowered position, a stop member for maintaining a predetermined spacing between the bar in its lowered position and the cutting chain where said spacing is open to facilitate viewing of the cutting chain in operation and means for pivoting the bar from its lowered position to a raised position to facilitate undercut operations.

4,335,514

SWITCH-BRAKE INTERLOCK FOR CHAIN SAW

Colin Overy, and Ernest R. Dynie, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/US80/01012, § 371 Date Aug. 8, 1980, § 102(e) Date Aug. 8, 1980
PCT Filed Aug. 8, 1980, Ser. No. 201,411
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—382 **21 Claims**



1. A control device for a switch mounted in a housing comprising:

(a) a trigger shiftably mounted in the housing remote from the switch,

(b) a link operatively associated to be selectively movable by

the trigger to cause the link to be shifted along a path toward the switch,

(c) a means connected to the link having a rest position and a removal position,

(d) the means in the rest position permitting the link to be shifted along a path to engage the switch, and

(e) the means in the removal position preventing the link from engaging the switch by removing the link from the path of the switch.

4,335,515

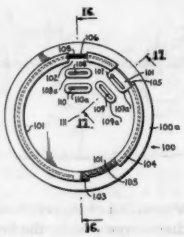
DRAFTING DEVICE FOR PRODUCING CONCENTRIC LINES

Raymond L. Jones, 6125 Manning, Raytown, Mo. 64133

Division of Ser. No. 59,789, Jul. 23, 1979, Pat. No. 4,275,502, which is a continuation-in-part of Ser. No. 971,934, Dec. 21, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 221,027

Int. Cl.³ B43L *11/06*

U.S. Cl. 33—27 L **9 Claims**



1. A drafting device for use with a template for cutting concentric shapes with respect to template patterns, comprising:

a flat, circular disc having upper and lower sides thereto,

a circular wall of lesser outer diameter than the disc outer diameter fixed to the upper side of said disc circumferentially inboard of the peripheral edge thereof and concentric thereto,

said circular wall relieved in at least one portion of the length thereof, with a slot through said disc in said relieved portion adapted to receive a cutting means therethrough,

said slot aligned in its length with a tangent to said wall extended in said relieved portion.

4,335,516

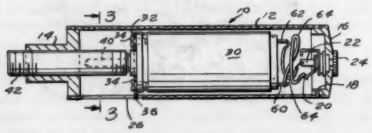
POWER DRIVEN MICROMETER

Arthur Edelstein, Jamaica, N.Y., assignor to Oriel Corporation, Stamford, Conn.

Filed Mar. 24, 1980, Ser. No. 133,626

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—164 R **10 Claims**



1. A power driven micrometer for engaging a workpiece surface comprising:

(A) a support;

(B) nut means secured to said support;

(C) rotatable screw means threadedly engaged by and supported by said nut means;

(D) means operatively connected to said screw means for rotatingly driving said screw means, said drive means and said screw means being secured together for longitudinal travel as a unit;

(E) engaging means operatively secured to said unit for longitudinal travel therewith and for operatively engaging said workpiece; and

(F) keying means for precluding rotation of said drive means relative to said support while enabling longitudinal travel of said drive means relative to said support;

whereby rotation of said screw means relative to said nut means results in longitudinal travel of said screw means/-drive means unit relative to said support.

4,335,517

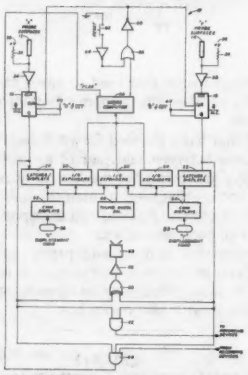
ZERO FORCE TOUCH PROBE

Harold S. James, Lynchburg, and Ronald N. Roseveare, Evington, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 12, 1981, Ser. No. 242,866

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 L **7 Claims**



1. A co-ordinate measuring system for determining the relative dimensions of an object comprising means for measuring the relative dimensions of the surfaces defining said object, said measuring means comprising a probe having a plurality of contact surfaces, each of said contact surfaces being insulated from the other of said contact surfaces and being selectively interconnected with the other of said contact surfaces to form one or more probe contact surfaces for one co-ordinate direction and one or more probe contact surfaces for another co-ordinate direction, and means for displaying the said relative dimensions determined by said measuring means, actuation of said measuring means causing said displaying means to display said relative dimensions at the instant contact is made by said measuring means with said surface being measured.

4,335,518

THREAD GAGING INSTRUMENT

Jan Reef, 41520 Eight Mile Rd., Northville, Mich. 48167

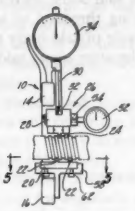
Filed Feb. 18, 1981, Ser. No. 235,592

Int. Cl.³ G01B *3/40*

U.S. Cl. 33—199 R **12 Claims**

1. An instrument for gaging external threads on a threaded member, comprising: a generally C-shaped frame having a pair of spaced arms, an anvil member supported from one of said arms and having seat elements engageable with axially spaced points on said threaded member to support said threaded mem-

ber for rotation relative thereto, said anvil member being pivotal to selected positions about an axis extending transverse to the axis of said screw to accommodate threads of different pitch, a gage element supported from the other of said pair of spaced arms in spaced relationship to said seat member for engagement between adjacent threads at a diametrically opposed surface of said threaded member for movement radially and axially of said threaded member, first indicator means to record radial movement of said gage element relative to said threaded member and second indicator means to record axial movement of said gage element relative to said threaded member.

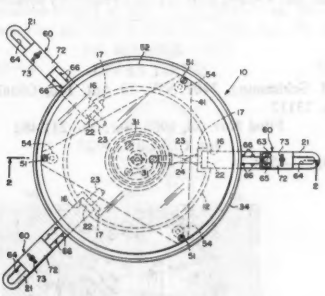


4,335,519

MIRROR MOUNT FOR AUTOMOTIVE ALIGNMENT APPARATUS

Pierre A. Alsina, Rochester, N.Y., assignor to SpinOptic, Inc., Hornell, N.Y.

Filed Apr. 30, 1980, Ser. No. 144,978
Int. Cl.³ G01B *11/275*
U.S. Cl. 33—288 **13 Claims**



1. A mechanism for releasably mounting a reflective surface on the wheel of an automotive vehicle or the like, comprising

a housing having therein a central opening, and having thereon a plane surface extending transverse to the axis of said opening,

a plurality of rigid arms projecting from said housing radially of said axis,

an adjustable clamping device mounted on each of said arms and releasably engagable with the rim of a wheel on a vehicle for supporting said housing on said wheel for rotation therewith,

a reflecting member adjustably mounted on said housing and having thereon a plane reflective surface facing away from said housing,

resilient means interposed between said member and said housing and resiliently urging said member into a first position in which said reflective surface thereof is disposed parallel to said plane surface on said housing,

means defining a plurality of linear fulcrums located in a common plane between said member and said housing, and

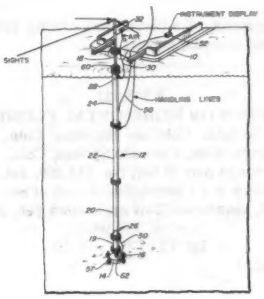
means for tilting said member selectively about any of said fulcrums to swing said member from said first position to a second position in which said reflective surface is inclined to said plane surface on said housing.

4,335,520

SURVEY SPAR SYSTEM FOR PRECISION OFFSHORE SEAFLOOR SURVEYS

Jeffrey V. Wilson, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,245
Int. Cl.³ E21B *47/022*
U.S. Cl. 33—312 **11 Claims**



1. Survey spar system for use with conventional shore-based surface survey systems for accurately translating between a survey surface position and a position on the seafloor, which comprises:

a. anchor means for providing in-water weight to fix said survey spar system to a position on the seafloor in the presence of currents and waves;

b. a stiff, straight (buoyant) member, said member being long enough to extend from said anchor means to above the surface of the water;

c. means for providing a flexible connection between one end of said straight member and said anchor means;

d. means for maintaining said straight member in a substantially upright position so that the end not connected to said anchor means extends above the surface of the water; and

e. means for determining the orientation of said straight member relative to said anchor means;

f. means for determining the heading of the anchor means in magnetic coordinates;

g. whereby the position of the end of said straight member coupled to said anchor means may be calculated when the position of the above the water end of the straight member is known.

4,335,521

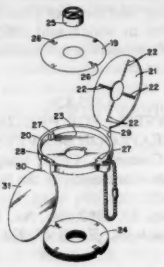
METHOD AND APPARATUS FOR GEOGRAPHIC LOCATION

Terry G. Rutherford, Rte. 5, Box 249, Candler, N.C. 28715

Filed Jun. 26, 1980, Ser. No. 163,300
Int. Cl.³ G01C *17/04*
U.S. Cl. 33—340 **2 Claims**

1. A geographic travel aid device, comprising a single piece molded base, top cover and bottom cover, of synthetic polymeric material, said top cover and bottom cover being attached to said base by separate flexible sections of said polymeric material, said base having latch means for selectively holding said top cover and bottom cover in place; compass

means attached to said base and visible through said top cover, said top cover having at lease two concentric rows of aper-



tures, the apertures of adjacent rows being radially aligned relative to said compass means.

4,335,522

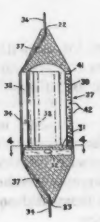
UP, DOWN OR HORIZONTAL PLUMB BOB

Robert L. Canfield, Colorado Springs, Colo., assignor to Canfield Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 816,208, Jul. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 775,294, Mar. 7, 1977, abandoned. This application Feb. 24, 1981, Ser. No. 237,608

Int. Cl.³ G01C *15/10*

U.S. Cl. 33—353 **14 Claims**



1. A plumb bob comprising an elongated body having top and bottom ends, spaced apart by a plurality of elongated parallel struts, at least one strut being hollow, transparent and filled with liquid except for an air bubble that acts as a horizontal level indicator, a transparent fluid chamber between said body ends, means for securing a string at a point on each body end, a fixed indicator point intermediate and in alignment with said body end points, and an associated movable level indicator within said chamber of different density than said fluid, said points describing an imaginary straight line, said movable level indicator being aligned with said fixed indicator point only when said imaginary line is vertical.

4,335,523

TOOL FOR ADJUSTABLY ALIGNING PIPE FLANGES AND STRUCTURAL MEMBERS

Gladys M. Bryant, 6515 E. Compton Blvd., Paramount, Calif. 90723

Filed Jan. 23, 1981, Ser. No. 227,663

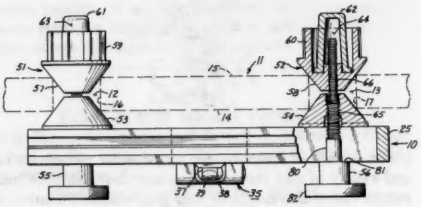
Int. Cl.³ G01C *9/28*

U.S. Cl. 33—371 **14 Claims**

1. A tool for adjustably determining the angular position of an apertured flange at the end of a pipe comprising:

an elongated body having two slots therein extending parallel to a datum line;

a pair of attachment means for attaching said body to said flange, each comprising a first self-centering member attachable to said body, a threaded bolt projecting beyond and coaxial with said first self-centering member, and a second self-centering member threaded to said bolt, and movable toward and away from said first self-centering member so they enter into respective apertures an clamp said tool to said flange; at least one of said bolts passing through said slot and closely fitting therein, and bearing against one side of said body, its respective first self-centering member being threaded to said bolt and bearing against the other side of said body to hold said bolt in a selected adjusted location along said slot;



a rotationally adjustable protractor dial bubble level rotatably mounted to said body, said level including angular indicia means referrable to said datum line, and

said first self-centering members being threadedly attached to a first thread on a respective bolt, said bolt including a head at the side of said body opposite from said self-centering members, the end remote from said head of each said bolt including a second, smaller diameter thread to which each respective second self-centering member is threaded, and each said second self-centering member including a first hand grip having a relatively larger diameter, and a speed grip having a relatively smaller diameter.

4,335,524

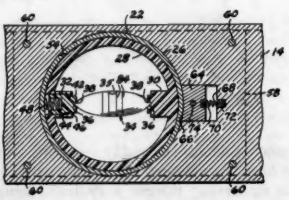
SPIRIT LEVEL

Fred H. Schimming, 3407 NW. 39 Apt. 140, Oklahoma City, Okla. 73112

Filed Nov. 28, 1980, Ser. No. 211,482

Int. Cl.³ G01C *9/28*

U.S. Cl. 33—388 **6 Claims**



1. A level comprising:

an elongated I-beam body having a web and parallel flanges forming a first pair of working surfaces;

a spheriod vial having a conical-shaped tip at the respective end of its major axis and containing bubble indicating means and having bubble registery means adapted to register a level position when the major axis of the vial is disposed in a preselected plane and either one of said first pair of working surfaces is in contact with a surface being measured;

adjustable mounting means for rotating said vial relative to said body for variable angular alignment of the major axis of the vial with respect to the planes of said first pair of working surfaces,

said mounting means including a ring assembly supported

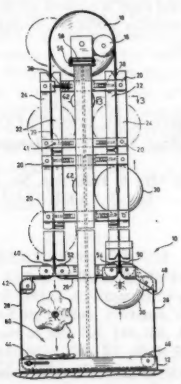
on its periphery in an opening formed in said web for rotation about an axis normal to the plane of said web,
said ring assembly having axially aligned diametrically opposed cylindrical lugs secured to its inner periphery,
one of said lugs having an axial bore and having an annular inwardly projecting flange at its end projecting toward the other said lug;
a plunger axially slidable in the lug bore and having a diametrically reduced end portion confronting said other lug and forming an annular shoulder normally abutting said annular flange, said plunger having an axial bore in its other end portion;
a spring normally biasing said plunger toward said other lug,
said plunger and said other lug having coaxially aligned conical recesses in their confronting surfaces for nesting the conical tips of said vial,
said lugs each having diametrically opposed laterally projecting wings for angularly rotating said ring assembly relative to said web; and,
a pair of plates secured to opposing sides of said web for maintaining said ring assembly within the web opening,
said plates having transversely aligned openings exposing the vial and having radially oriented angle calibrating indicia scored thereon adjacent the respective aligned opening,
whereby the major axis of the vial may be selectively aligned with the angle indicia to permit selective indication of the position of the first pair of working surfaces when one of the working surfaces is in contact with a surface being measured.

4,335,525

BALLOON DRYER

David R. McCleary, Orangeville, and Djuro Slivar, Brampton, both of Canada, assignors to Superior Rubber Industries Ltd., Orangeville, Canada

Continuation-in-part of Ser. No. 177,569, Aug. 13, 1980, abandoned. This application Mar. 26, 1981, Ser. No. 247,910
Int. Cl.³ F26B *15/22*
U.S. Cl. 34—4 **41 Claims**



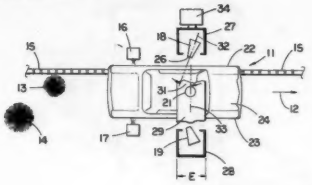
39. Process for drying printing medium on inflated balloons, comprising the steps of:
inserting the neck of each of said inflated balloon between a pair of mutually facing belt flights,
causing said mutually facing belts to press together to maintain said balloon neck sealed,
causing said mutually facing belts flights to travel in the same direction at substantially the same speed along a predetermined path;
causing said balloons to pass a radiation means for drying said printing medium on said inflated balloons.

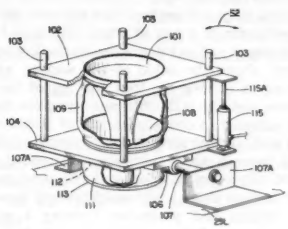
4,335,526

VEHICLE DRYING MACHINE AND METHOD

Judson L. Smith, 5432 Lighthouse La., Tempe, Ariz. 85283

Continuation of Ser. No. 932,273, Aug. 9, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,337
Int. Cl.³ F26B *15/10*
U.S. Cl. 34—229 **4 Claims**



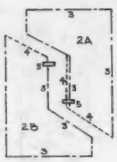


1. In a vehicle drying apparatus having air discharge means and a vehicle pathside mount for same, the improvement comprising:
at least one nozzle having a discharge axis directed generally horizontally toward the path of the vehicle, said nozzle having a pivot axis for pivoting to tilt said discharge axis and blast air against the side of a vehicle above and below a given point;
an inverted U-shaped plenum serving as said mount, said plenum having horizontally spaced legs and an upper crossmember spanning the space between said legs, and being large enough for a vehicle to pass between said legs and under said crossmember, said one nozzle being in one leg of said plenum;
another nozzle substantially like said one nozzle and located in the other leg of said plenum, the discharge axes of said nozzles being directed generally toward an imaginary plane which is equidistant from said legs and perpendicular to an imaginary plane containing said legs;
a third nozzle substantially like said one nozzle and mounted on said crossmember and having a discharge axis directed downward;
air being supplied under pressure to all of said nozzles from said plenum;
said third nozzle being extendable downwardly, having a mount accommodating such vertical extension, the mount comprising:
(a) a base member pivotally mounted to said crossmember and having a nozzle passage opening therein;
(b) guidepost means projecting upward from said base member;
(c) a nozzle support affixed to said nozzle and guidingly received on said guidepost means and slidable vertically thereon; and
(d) said third nozzle being fixed to said nozzle support and projectable downward through said nozzle passage opening when said support is slided downward on said guidepost means.

4,335,527
DISPOSABLE BOOTS

James B. Pask, 2812 Bree Hill Rd., Oakton, Va. 22124

Filed Feb. 7, 1980, Ser. No. 119,203
Int. Cl.³ A43B 3/16
U.S. Cl. 36—7.1 R 10 Claims



1. A pair of disposable boots manufactured in the form of heat-sealable flexible film, comprising:

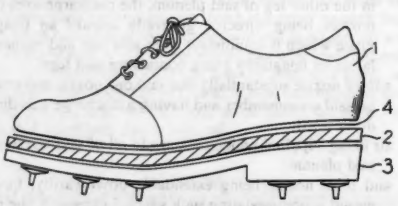
a. two layers of said film;

b. heat-seal lines and perforations adjacent thereto defining the perimeter of a pair of boots with each boot having a foot segment and an integral leg encircling segment which extends above the ankle of the wearer, and having an opening to receive the foot and leg of the wearer; and wherein said film is flexible permitting the disposable boot to be adapted to cover a variety of footwear of varying sizes and at the same time covering clothing apparel which extends down the leg of the wearer or which disposable boot can be adapted to be worn solely as footwear; at least three additional heat-seal lines and perforations within said perimeter forming a pre-determined configuration of disposable boots which lines may be a combination of parallel lines, perpendicular lines, angled lines and curved lines producing disposable boots generally fitting the contour and form of both the foot and leg of the wearer in one integral element; and wherein the height of said leg encircling segment is greater than one-half the length of the sole segment.

4,335,528
SPORT SHOES

Morio Watanabe, Sakai, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 12, 1980, Ser. No. 120,952
Claims priority, application Japan, Oct. 10, 1978, 53-144440; Jul. 30, 1979, 54-97905
Int. Cl.³ A43B 13/12; A43C 13/08; A43B 5/00
U.S. Cl. 36—30 R 5 Claims

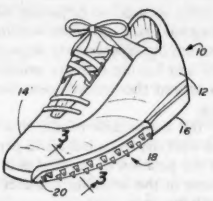


1. A sport shoe comprising a shoe sole and a shoe upper composed of natural or artificial leather, said shoe sole being an integral laminate of an insert material layer the lower surface of which is bonded to an injection-molded synthetic resin layer to form said integral laminate, said synthetic resin being selected from the group consisting of nylon-11 and nylon-12, said insert material layer being made of a material which has a good bondability to the shoe upper and which does not undergo thermal deformation at the injection-molding temperature and pressure, said material being selected from the group consisting of natural leather, artificial leather, rubber, nonwoven fabric, felts and fibers, the upper surface of said insert material layer being bonded to the lower portion and insole of said shoe upper by an adhesive, said shoe sole having been prepared by placing into an injection mold a preformed insert material layer and then injection-molding said synthetic resin into said mold to form a monolithic synthetic resin layer and to heat-bond the lower surface of the insert material layer to the upper surface of the synthetic resin layer formed by the injection-molding.

4,335,529
TRACTION DEVICE FOR SHOES

Michael J. Badalamenti, 1478 Perry Lake Rd., Ortonville, Mich. 48462

Filed Dec. 4, 1978, Ser. No. 966,346
Int. Cl.³ A43B 23/28, 5/00
U.S. Cl. 36—59 R 8 Claims

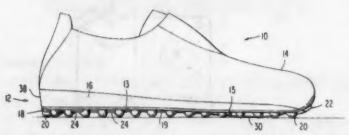


1. A running shoe comprising an outer side, an inner side, a sole, a first traction surface, and a second traction surface, wherein: said first traction surface and said second traction surface are associated with and disposed on the inner side and the outer side, respectively, of the upper portion of said shoe; each of said traction surfaces extends along a side of said shoe from about the forward portion of the heel to about the region where the toe area commences; and each of said traction surfaces is disposed above said sole of the shoe at an acute angle; whereby, when said shoe is rotated about a horizontal axis, at least one of said traction surfaces is brought into contact with the ground surface.

4,335,530
SHOE SOLE CONSTRUCTION

Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229

Filed May 6, 1980, Ser. No. 147,140
Int. Cl.³ A43B 13/12
U.S. Cl. 36—83 24 Claims



1. A shoe, which comprises:

an upper;

an outsole made of a material having a first density and including at least one cutout portion formed therethrough; and

a midsole made of a material having a second density less than said first density and positioned between said upper and said outsole, said midsole including a lower surface having a protruding portion that extends through said cutout portion of said outsole;

wherein said outsole includes a bottom surface and wherein

said protruding portion extends below a portion of said bottom surface;

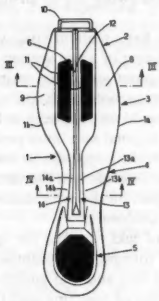
wherein said outsole includes a plurality of lug members that extend downwardly and outwardly from the periphery of said bottom surface, the lowermost portions of certain of said lug members extending below said protruding portion and thereby adapted to contact the ground before said protruding portion contacts the ground upon foot-initiated ground impact.

4,335,531

CROSS COUNTRY SKI BOOT

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon & Fils, Annecy, France

Filed Aug. 20, 1980, Ser. No. 179,854
Claims priority, application France, Aug. 24, 1979, 79 21354
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—117 **6 Claims**



1. In a cross country ski boot comprising a sole made of moulded plastics material substantially in the form of a rectangle elongated in the longitudinal direction in its central part, said sole presents, in the front plantar zone, a central part of considerable thickness, with flat, relatively narrow lower surface, in contact with the top surface of the ski, which is divided into two by a longitudinal centering groove extending over the whole length of the central part of the sole and intended to cooperate with a rib of complementary shape provided on the top surface of the ski, and, on either side of this central part, two side portions whose thickness decreases towards the longitudinal edges of the sole, with flat or curved lower surfaces, inclined upwardly from the central part towards the longitudinal edges of the sole which are located at a level higher than that of the top face of the ski.

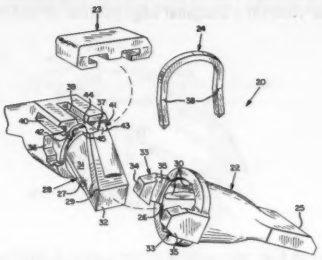
4,335,532

EXCAVATING TOOTH

Frederick C. Hahn, Aloha; William R. Barber, Jr., Portland, both of Oreg., and David A. Hampel, Vancouver, Wash., assignors to ESCO Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 144,368, Apr. 28, 1980, abandoned. This application Feb. 25, 1981, Ser. No. 235,771
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 R **35 Claims**

1. An excavating tooth comprising an adapter element and a point element, said adapter element having means at one end for connection to a bucket or the like and means at the other end for coupling to said point element, said point element having an earth engaging edge at one end constituting the tooth forward end and means at the other end for coupling to said adapter element, said coupling means including a nose on one element and a nose receiving socket on the other element, a plurality of cooperating generally helical thread means on said nose and in said socket whereby said point element is rotated about a longitudinal axis to install the same on said adapter element, and lock means externally of said nose releasably connecting said elements to prevent reverse rotation of said point element when the same is installed on the said adapter element, said lock means being rearward of said nose



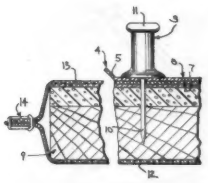
and socket, said adapter element being equipped with said nose forward of a relatively massive section on said adapter and said point element being equipped with said socket, said lock means being positioned transverse to said longitudinal axis of said massive section.

4,335,533

CUSHIONED NEEDLEWORK BLOCKING BOARD

June E. Kroenke, 2199A Scenic Rd., Richfield, Wis. 53076

Filed Mar. 10, 1980, Ser. No. 128,769
Int. Cl.³ D06F *71/32*; A41H *5/00*
U.S. Cl. 38—141 **1 Claim**



1. A needlework blocking apparatus for blocking of needlework including a base fabric with an interwoven stitched threading, comprising a base board formed of a pressed fibrous material to releasably receive and hold a sharp pin-like element, an outer surface cover for such board, such cover being formed of a napped 100 percent woven cotton cloth and being moisture-absorbing and a resilient polyurethane foam pad bonded throughout its interface to said fabric and located between said board and said fabric, said cover being provided with needlework blocking indicia, a series of rectangular blocking patterns and a series of spaced circular blocking patterns for locating a needlework piece upon said cover with the piece adapted to be releasably affixed in position upon said cover by a plurality of said pin-like elements, and a back fabric cover wall secured to said moisture-absorbing fabric about the periphery of said board to enclose the board and present a fabric surface to the back side of the blocking apparatus.

4,335,534

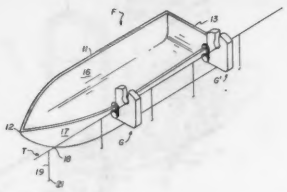
TROTLINE GUIDE

Roe Allred, Box 544, Munday, Tex. 76371

Filed Jun. 17, 1980, Ser. No. 160,319
Int. Cl.³ A01K *79/00*
U.S. Cl. 43—27.4 **9 Claims**

1. A trotline guide for allowing a main trotline with plural depending leaders having hooks to pass therethrough comprising, in combination, a substantially planar body having side edges and a top edge, said body top edge having a recess

including a circular portion and a upwardly opening slot extending from said circular portion for accommodating the trotline and means for clamping said body to the hull of a fishing vessel with said body extending substantially perpendicular to the side wall of said hull and in a substantially vertical plane wherein a marginal edge portion of said body defining said recess is of arcuate shape having a smooth contour and of greater thickness than the adjacent portions of said body to facilitate the passage of the trotline through said recess and wherein said body marginal edge portion is substantially tear shape in cross section so that hooks passing through said recess encounter no obstructions upon which they may get ensnared.



4,335,535

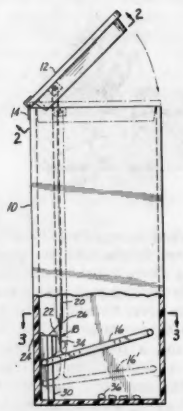
RODENT TRAP

Donald C. Lindley, 3 Skipper, Irvine, Calif. 92714

Continuation of Ser. No. 127,853, Mar. 6, 1980, abandoned. This application May 26, 1981, Ser. No. 267,610

Int. Cl.³ A01M *23/18, 23/22*

U.S. Cl. 43—61 **6 Claims**



1. A rodent trap comprising:

an enclosure having a top and a bottom;

a hinged lid adapted to seal the top of said enclosure;

closing means for closing said lid comprising a movable platform means in said enclosure, said platform being free to rotate and also to move vertically;

latch means for latching said platform in a restrained position spaced from the bottom of said enclosure;

vertical rail means attached to a wall of said enclosure for guiding the rotational and vertical movement of said platform;

knob means on said platform for engagement with said rail means for guiding said platform vertically; and

connecting means connecting said platform to said lid, whereby weight applied to said platform moves said platform downwardly toward the bottom of said enclosure, releases said latch and closes said lid by the force of the weight applied to said platform.

4,335,536

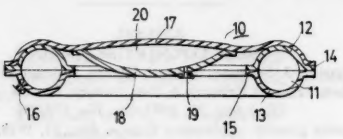
INFLATABLE THROWING TOY

Sidney H. Magid, 4th Fl., No. 10, Alley 5, Lane 12, Sec. 4, Jen Ai Rd., and Wang C. Chung, 3, 11th Fl., No. 311, Sec. 4, Chung-Hsiao E. Rd., both of Taipei, Taiwan

Filed Oct. 23, 1980, Ser. No. 199,868

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—74 D **15 Claims**



1. An inflatable throwing toy of air-impervious sheet material comprising:

an inflatable ring having an inflating valve located thereon, said ring consisting of a top section and a bottom section joined at their outer and inner peripheries;

two or more disc sections with at least a first disc section attached all around its periphery to the top section of said inflatable ring beyond said inner peripheries and a second disc section attached opposite to said first disc section to form an inflatable enclosure therebetween;

and means provided on the inflatable enclosure for inflating said inflatable enclosure;

said top section of said ring and the uppermost disc of said attached discs forming a substantially convex upper surface when said ring and said enclosure are inflated;

said bottom section of said ring and the lowermost disc of said attached discs forming a substantially concave lower surface; said concave and convex surfaces providing an air flow permitting said toy to be given a controlled movement when thrown.

4,335,537

TOY AIRCRAFT

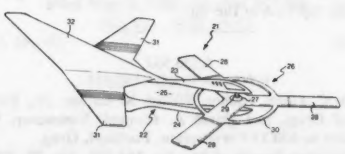
Terence J. Walker, Naremburn, Australia, assignor to Plectrum Pty. Limited, Naremburn, Australia

Filed Nov. 18, 1980, Ser. No. 208,108

Claims priority, application Australia, Nov. 28, 1979, PE1510

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—79 **3 Claims**

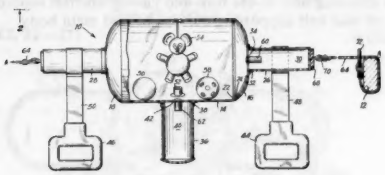


1. A toy aircraft comprising a body having a forward and rearward portion, said forward portion having a generally U-shaped configuration so as to provide two forwardly horizontally extending legs defining a forwardly open recess with one of the legs being vertically beneath the other; horizontal and vertical control surfaces attached to the body at said rear portion to stabilize and control the aircraft as it moves through the air; and a rotatable wing assembly for rotation about an axis and to pass through said recess, said assembly including a shaft extending between said legs so as to be supported thereby and being located on said axis, a plurality of blades extending radially outwardly from said shaft at predetermined angular positions thereabout while being rotatably supported thereby.

4,335,538
INFLATABLE OVERHEAD CRIB GYM TOY

Sheldon Greenberg, New York, N.Y., assignor to Shelcore, Inc., South Plainfield, N.J.

Filed Nov. 12, 1980, Ser. No. 206,255
Int. Cl.[3] A63H 3/06; A63B 7/02, 7/04
U.S. Cl. 46—88 10 Claims



1. A soft, inflatable, crib-supported, gym-type, overhead nursery toy for encouraging children to perform exercise-type manual movements with safety, comprising:

(a) an air-inflatable tubular body constituted of thin plastic material, said tubular body having transparent wall portions bounding an interior main chamber, said tubular body being elongated along a longitudinal axis of symmetry and having opposite axial ends;

(b) a pair of axially-extending, air-inflatable tubular extensions each located at a respective axial end of the tubular body, each extension being constituted of thin plastic material wall portions which bound an interior compartment that is in air communication with the main chamber of the tubular body;

(c) a radially-extending, air-inflatable tubular projection intermediate the axial ends of the tubular body, said tubular projection being constituted of thin plastic material wall portions which bound an interior space that is in air communication with the main chamber of the tubular body;

(d) a toy object mounted within the main chamber for movement relative to the tubular body when the inflated toy is subjected to manual movement;

(e) gym means connected to each extension and extending generally radially downwardly towards the child, for providing a handhold for each extension for the child to grasp and thereby perform the exercise-type movements; and

(f) air-admitting means on the tubular body, for inflating the tubular body, the tubular extensions and the tubular projection from a collapsed configuration in which the deflated body, extensions and projection can be stored, to an inflated configuration in which the toy object is visible through the transparent wall portions and movable relative to the tubular body when the child grabs the gym means and manipulates the toy,

said inflated body, extensions and projection being soft and yieldable to the touch to protect the child from any injury during manipulation of the toy, and being self-restorable to said inflated configuration when the child ceases said manipulation.

4,335,539
GAME CALL

Harold G. Jones, 10027 Cayuse La., Boise, Id. 83703

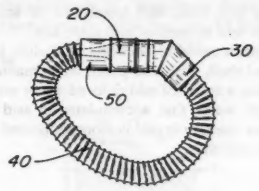
Filed Apr. 20, 1981, Ser. No. 255,699
Int. Cl.[3] A63H 5/00
U.S. Cl. 46—179 3 Claims

1. A game call comprising a whistle having an upper vent opening to the atmosphere, a longitudinally extending air chamber, and a mouthpiece for the oral introduction of air for the controlled production of sound;

a first adapter operable to engage said whistle at an opposing end from said mouthpiece, said adapter defining a hollow tube in fluid communication with said whistle;

a hollow, flexible open-ended tube attached to said first adapter at the end opposite said whistle and in fluid communication with the hollow tube of said adapter, said flexible tube being of sufficient length and resiliency to be doubled back upon itself in a substantially O-shaped configuration; and

a second adapter connected to said flexible tube at an end opposite said first adapter, said second adapter defining a

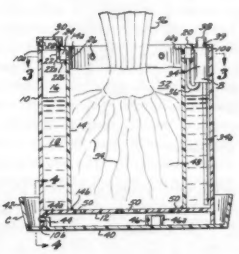


hollow tube in fluid communication with said flexible tube and said second adapter operable to protectingly receive sa[3]l whistle and adapted to matingly engage said first adapter in a closed position to form a carrying handle therewith.

4,335,540
COMBINED PLANT CONTAINER AND WATERING DEVICE

Ron P. Allen, 6003 Arbor Rd., Lakewood, Calif. 90713

Filed Nov. 28, 1980, Ser. No. 211,467
Int. Cl.[3] A01G 25/00
U.S. Cl. 47—79 2 Claims



1. In combination with a quantity of soil, a plant having roots embedded in said soil, and a quantity of colored water, a container for so supporting said soil that said plant and roots may be watered at desired time intervals, said container including:

a. an assembly that includes outer cylindrical shell that has upper and lower ends; a bottom disposed within said cylindrical shell and bonded to the interior thereof upwardly from said lower end; an inner cylindrical shell of substantially less external diameter than the interior diameter of said outer shell, said inner shell bonded to said bottom and extending upwardly therefrom to terminate in an upper end substantially the same height as said upper end of said outer shell; a ring shaped top that extends between said upper ends of said inner and outer shells; a tubular boss that extends upwardly from an opening in said top; a cap that removably and sealingly engages said boss; said top, outer and inner cylindrical shells and a portion of said bottom cooperating to define an annulus shaped confined space, said outer and inner shells at least being transparent, said annulus shaped space capable of being substantially filled with said colored water by use of said tubular boss when said cap is removed therefrom; said bottom and said inner cylindrical shell cooperating to define a confined space that holds said soil and roots with said plant extending upwardly from said assembly;

b. a manually actuatable water pump that has a spray defining discharge and a downwardly extending tubular inlet,

said water pump mounted on said top with said inlet extending downwardly into said annulus shaped space, with said colored water in said annulus shaped space adding an attractive appearance to said assembly and at least partially concealing said soil in said confined space;

c. a shallow dish that includes a flat bottom and an upwardly extending side wall, said lower end of said outer shell resting on said bottom of said dish; and

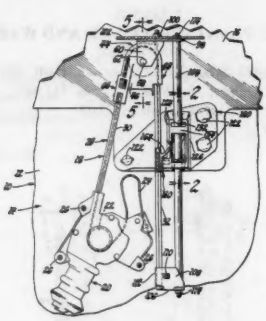
d. means for removably securing said dish to dish outer cylindrical shell, with said pump when manually actuated discharging a spray of said colored water onto said plant, and excess water that accumulates in said soil flowing through an opening in said bottom supported by said outer shell into said dish.

4,335,541

WINDOW DRIVE ARRANGEMENT

Bohdan Kazewych, Union Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1979, Ser. No. 70,640
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—360 **3 Claims**



1. In combination with a support having a window opening, a window movable between open and closed positions relative to the opening, a perforated tape for moving the window, drive means for moving the tape, and elongated longitudinally open track means for guiding movement of the tape, the improvement comprising, window drive means interconnecting the tape and the window and including a tape driven member having a row of barbs extending through the track means opening and hooked through respective perforations of the tape for movement of the driven member and tape as a unit relative to the track means, the ultimate barbs at each end of the row facing oppositely of each other, with one such barb being longer than the other such barb for acceptance of greater loads imposed therebetween and the tape during window movement, a window drive member secured to the window, means drivingly interconnecting the tape driven member and the window drive member and accommodating separation of such members and concomitant relative rotation thereof during window movement, and means operative between the tape driven member and the window drive member limiting relative rotation of the members upon separation thereof to maintain the driving connection therebetween.

4,335,542

COMBINATION BELT AND DISK SANDER MACHINE

Floyd M. Howe, 5201 Arcade Ave., NE., Salem, Oreg. 97303

Filed May 19, 1980, Ser. No. 150,997
Int. Cl.³ B24B *21/10, 21/18*
U.S. Cl. 51—3 **5 Claims**

1. An abrading machine comprising,

a power output shaft driven by a power source,

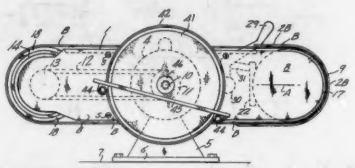
a main body of elongate configuration having a belt supporting surface,

a powered roll mounted on said main body adjacent one end thereof,

power transmission means coupling said power output shaft and said powered roll,

a tail roll located adjacent the remaining end of said main body,

an abrading belt on the rolls and having one run superposed on said belt supporting surface of said main body,



a tail roll mounting assembly on said main body including a spindle carrier block, resilient means biasing said spindle carrier block toward a belt tensioning position, a spindle carried by said block on which said tail roll is mounted, upright pivot means coupling said spindle to the spindle carrier block, a spindle adjustment screw carried by said block and acting on said spindle to position same about said upright pivot means for purposes of centering the abrading belt on the tail roll during belt travel, and

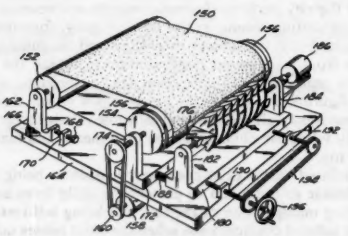
an abrading disk mounted on the outer end of said output shaft.

4,335,543

METHOD AND MEANS OF MANUFACTURING AN IMPROVED DISC REEL MOWER

Carl A. Pike, 13600 S. Prairie Ave., Hawthorne, Calif.

Division of Ser. No. 140,254, Apr. 14, 1980, Pat. No. 4,267,690.
This application Feb. 23, 1981, Ser. No. 236,882
Int. Cl.³ B24B *21/02*
U.S. Cl. 51—145 R **3 Claims**



1. A machine especially constructed and adapted for sharpening cylindrical mower knife constructions made up of a plurality of generally elliptical discs lying generally parallel to each other at an acute angle to the axis of the cylindrical knife construction, comprising:

a continuous elongate abrading belt having a width at least as great as the length of the knife construction to be sharpened;

means for carrying the belt in a continuous revolving movement to present the abrading surface at one point in the revolutionary path of the belt in a straight line lateral to the abrading surface;

means for supporting a cylindrical knife construction for presenting the peripheral surface of said construction at said straight line on said belt; and

means for rotating the cylindrical knife construction in contact with the straight line surface of the abrading belt

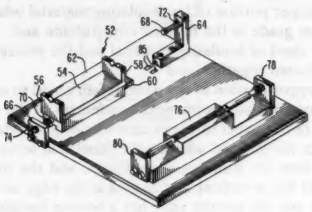
for abrading and sharpening the periphery of the discs which comprise the knife construction.

4,335,544

STONE-POSITIONING APPARATUS AND METHOD

Ernest T. Manson, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,758
Int. Cl.³ B24B *9/16*
U.S. Cl. 51—277 **9 Claims**



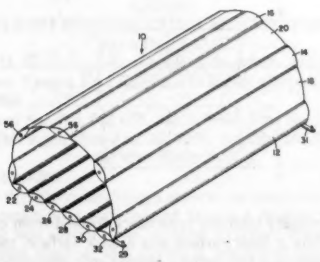
1. Apparatus for positioning a stone in a pencil comprising:
a platform,
a holder adapted to support said pencil in a manner wherein the two ends of said pencil extend beyond a front and rear surface of said holder, said holder being mounted on means for guiding said holder along a direction parallel to the longitudinal axis of said pencil, said guiding means being affixed to said platform,
a pencil stop affixed to said platform in a position facing the rear surface of said holder and adapted to contact one end of said pencil and thereby limit the movement of said pencil along said axis, and
a holder stop affixed to said platform in a position facing the front surface of said holder and shaped to allow movement of said pencil along said axis beyond said holder stop, but to contact the front surface of said holder and thereby limit the forward movement of said holder.

4,335,545

INFLATABLE TENT

James L. Couch, 13433 Dyer, Sylmar, Calif.

Filed Jan. 29, 1980, Ser. No. 116,386
Int. Cl.³ E04B *1/345*
U.S. Cl. 52—2 **4 Claims**



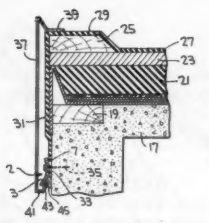
1. An inflatable tent comprising a plurality of alternating air cells and strips of material forming the body, each air cell containing a plurality of female portions of air inlet valves, a front portion comprising an air cell, a single air intake valve in the front portion, a plurality of male portions of one-way valves adapted to pass air into each female portion of the air inlet valves in each cell from the front portion air cell, said one-way valves also adapted to close upon the release of air from a cell.

4,335,546

EXTRUDED ALUMINUM TERMINATION BAR

Thomas L. Kelly, 31 Sands St., Waterbury, Conn. 06723

Filed Nov. 19, 1979, Ser. No. 95,467
Int. Cl.³ E04D *1/36*
U.S. Cl. 52—58 **3 Claims**



1. A reversible termination bar including, in combination, a roof structure, a flexible rubber roofing membrane and said termination bar comprising a body portion having a plurality of longitudinally extending transversely spaced apart ribs on one surface thereof and a flange angularly extending from said body portion, the surface of said flange which merges with the surface of the body portion having the ribs thereon being planar, and the opposite surface of said body portion having longitudinally extending spaced apart ribs adjacent one edge thereof and the opposite surface from the planar surface of the angularly extending flange having longitudinally extending transversely spaced apart ribs provided adjacent the edge thereof which is remote from the body portion, said termination bar adapted to engage and maintain in proper position an end edge of the flexible rubber roofing membrane, when said termination bar is applied and in maintaining and holding engagement with said end edge of the membrane the longitudinally extending transversely spaced apart ribs on one surface of said body portion engage and bite into said membrane and the angularly extending flange is directed away from said membrane, and when said termination bar is reversed so that said angularly extending flange is directed toward and in engagement with said end edge of the membrane the longitudinally extending spaced apart ribs adjacent one edge of said opposite surface of said body portion are in maintaining and holding engagement and said ribs are biting into said end edge of the membrane and said longitudinally extending transversely spaced apart ribs on said opposite surface of the angularly extending flange are in maintaining and holding engagement and biting into said end edge of the membrane, and means for fastening said termination bar to the roof structure.

4,335,547

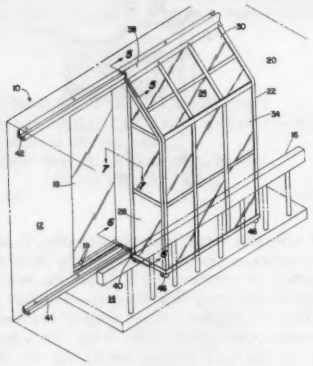
BALCONY GREENHOUSE

Westelle Maxwell, 18501 Hilliard Blvd., Rocky River, Ohio 44116

Filed Jun. 19, 1980, Ser. No. 161,044
Int. Cl.³ E04B *7/16*; A01G *9/00*
U.S. Cl. 52—66 **9 Claims**

1. A movable greenhouse for use in conjunction with an outside vertical wall of a building having a transparent access opening providing access and view to a walk area outside the building adjacent to the building access opening, the greenhouse comprising:
a greenhouse enclosure having front, side and rear walls adapted to transmit light and heat to the interior thereof and to afford a view therethrough and through said access opening, said greenhouse having a forward section adapted to be disposed adjacent to said building wall

having said opening, said greenhouse section having an access opening adapted to be approximately aligned with said building access opening to provide direct access from said building opening to the interior of said greenhouse enclosure; said greenhouse enclosure having an upper slidable structural member, said upper slidable structural member engaging a horizontally disposed lateral channel secured to said building wall above said bulding access opening whereby said structural member and said channel interact in sliding engagement to permit lateral movement of said greenhouse in a direction parallel to said building



wall; said greenhouse enclosure having a plurality of wheels operatively connected to a bottom portion of said greenhouse and supporting said greenhouse on said horizontally disposed walk area adjacent to said building access opening to facilitate lateral movement of said greenhouse;

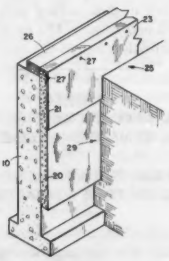
said greenhouse enclosure being movable in a lateral direction parallel with said building wall whereby said greenhouse enclosure can be moved laterally sideways to free said building access opening and provide unobstructed access from said building to said walk area.

4,335,548

INSULATING SKIRT

Erwin G. Rehbein, Waupaca, Wis., assignor to Millcraft Housing Corp., Waupaca, Wis.

Filed May 19, 1980, Ser. No. 144,251
Int. Cl.³ E02D *31/00*
U.S. Cl. 52—169.11 **4 Claims**



1. A panel for an insulating skirt for use in insulating the outer perimeters of foundations and footings comprising;

(a) a sheet of substantially rigid and liquid impervious insulating material which is substantially rectangular in shape, and

(b) an outer protective shield for said insulating material said shield being of durable reinforced fiberglass material which is seamable and patchable in place to provide means for the establishment and maintenance of a substantially continuous and uniform shield for the outside perimeter of an insulating skirt for a foundation and the like and which is substantially unaffected by the elements present in the vicinity of said foundations and footings and configured so as to be coextensive with those portions of the insulating material which will be exposed and above grade in a finished construction and the outer protective shield further being configured so as to be coextensive with at least the upper portion of the insulating material which is to be below grade in the finished construction and

(c) the sheet of insulating material and the protective shield are joined together, and

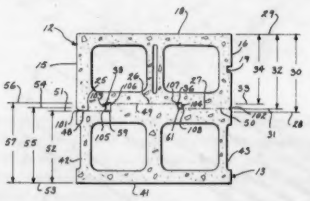
(d) an upper portion of the panel is fabricated so as to permit the substantially permanent securement of the upper portion of the panel to upper elements of a foundation, footing or the like and wherein the panel is to serve as a pouring form for footings, foundations, and the like and the shield has a vertical face having a top edge and a bottom edge and the bottom edge has a bottom horizontal flange projecting therefrom and the flange is terminated by a upward directed lip and the top edge has a top horizontal flange projecting therefrom in the same direction as the bottom horizontal flange and the top horizontal flange extends further from the vertical face than does the bottom horizontal flange and the top horizontal flange has projecting therefrom a first downward directed lip which is opposite the upward lip of the bottom horizontal flange and the top horizontal flange is terminated by a second downward directed lip having an enlarged end which becomes imbedded in cement after it is poured and thereafter substantially permanently locks the panel into engagement with the hardened cement; and the insulating sheet is sized so as to be slidably received by and retained in the channel formed by the vertical face, the top horizontal flange, the bottom horizontal flange, the upward directed lip and the first downward directed lip of the top horizontal flange.

4,335,549

METHOD, BUILDING STRUCTURE AND SIDE-SPLIT BLOCK THEREFORE

Robert W. Dean, Jr., Milwaukee, Wis., assignor to Designer Blocks, Inc., Milwaukee, Wis.

Filed Dec. 1, 1980, Ser. No. 211,513
Int. Cl.³ E04C *1/00*; B44F *7/00, 9/04*
U.S. Cl. 52—98 **13 Claims**



1. In a primary masonry type block formed from concrete and providing a front surface and a back surface, said front surface including a first surface portion split generally along a first splitting plane spaced from a reference plane provided by said back wall surface by a first predetermined depth to provide a first distinct irregular split surface area and a second surface portion split generally along a second splitting plane spaced from said reference plane by a second predetermined depth substantially different than said first depth to provide a second distinct irregular split surface area distinguishable from said first surface area, said front surface providing said first and

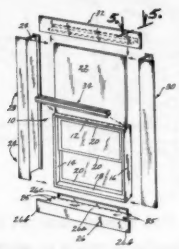
second distinct irregular split surface areas of distinguishable varying depths for a decorative appearance.

4,335,550

PRIME WINDOW UNIT INSTALLATION SYSTEM

David P. Johnson, 5660 Marcy St., Omaha, Nebr. 68106

Filed Dec. 19, 1980, Ser. No. 218,215
Int. Cl.³ E04C *1/12*; E04B *1/08*
U.S. Cl. 52—99 **19 Claims**



1. A new prime window unit assembly for installation in an existing window unit opening having an existing window frame installed therein, comprising,

a new prime window unit including a new head jamb, side jambs, sill and sash,

an elongated bottom channel,

a pair of elongated side channels having upper and lower ends,

an elongated top channel,

said channels comprising separate independent members adapted for connection to said new prime window unit,

fastening means securing said bottom channel and side channels to said new sill and side jambs respectively,

said top channel being connected to and extended between the upper ends of said side channels,

each of said channels including an inner wall and an outer wall, said inner wall extending exteriorly of said new prime window unit thereby to recess said new prime window unit interiorly of said outer wall, and said outer wall extending outwardly from said inner wall,

each of said channels including means for selectively reducing the outward extent of the outer wall thereof uniformly along the length of said outer wall, and

said new prime window unit assembly being preassembled for installation as a unit in said existing window unit opening.

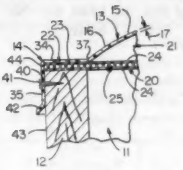
4,335,551

SKYLIGHT CONSTRUCTION AND METHOD OF MAKING SAME

William D. Benkelman, Bloomfield Hills, Mich., and George C. Carlyon, Tampa, Fla., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 921,658, Jul. 3, 1978, Pat. No. 4,242,849.
This application Jun. 25, 1980, Ser. No. 162,989
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—200 **10 Claims**

1. In a skylight comprising; a support; an outer sheet made of a light-transmitting material and having a peripheral portion adjoining said support; and an inner structure made of light-transmitting material and having a peripheral edge portion attached to said support defining a first air space between said outer sheet and said structure; the improvement wherein said inner structure comprises a pair of inner sheets each made of a light-transmitting material, said inner sheets being held in spaced relation defining a second air space therebetween, said sheets and first and second air spaces enabling provision of said skylight construction having mininmum weight yet providing minimum heat loss in winter and minimum heat gain in summer, said inner sheets being made of synthetic plastic material, and means holding said inner sheets to define said second air space therebetween, said holding means comprising a plurality



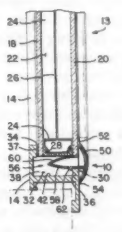
of substantially identical spaced parallel ribs extending between said inner sheets and fixing same together in spaced parallel relation.

4,335,552

GLAZING BEAD

Paul T. Blanchett, 17557 Wallingford Ave. North, Seattle, Wash. 98133, and Philip J. Blanchett, 8816 Shell Place Rd., Edmonds, Wash. 98020

Filed Dec. 31, 1980, Ser. No. 221,882
Int. Cl.³ E06B *3/26*
U.S. Cl. 52—202 **14 Claims**



1. A glazing bead adapted to secure a second, larger thickness of insulated window means in a window frame means designed to normally receive a first, smaller thickness of insulated or uninsulated window means, wherein the window frame means is of the type having a glazing channel terminating on one side in a glazing lip, wherein the glazing bead comprises:

resilient wall means adapted to engage, when installed, the window means and the window frame means;

locking means adapted to engage, when installed, the inner edge of the glazing lip on the window frame means;

resilient folded leg means, wherein said folded leg means comprises first leg member means which extend outwardly from said wall means and then folds and reverses direction to form second leg member means which extend towards said wall member means, wherein said locking means extends outwardly from said folded leg means;

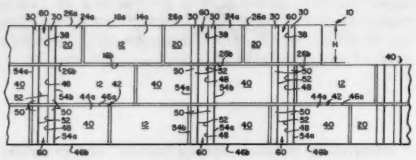
wherein, when said glazing bead is installed, said resilient folded leg means is adapted to be compressed between said window means and said window frame means and urge said locking means towards said frame means into engagement with said glazing lip; and

wherein, when said glazing bead is installed, said resilient wall means is adapted to be compressed and resiliently urge said locking means laterally towards and into engagement with said glazing lip; and wherein said compression also tends to bring said resilient wall means into firm contact with at least one of said window means and said window frame means.

4,335,553
BUILDING BLOCK SYSTEM

Gerald Gould, New Canaan, Conn., assignor to Roger E. Gould, New Canaan, Conn., a part interest

Filed Jun. 16, 1980, Ser. No. 159,509
Int. Cl.³ E04B *2/70, 2/48*
U.S. Cl. 52—375 **7 Claims**



1. A building system comprised of a plurality of rigid, preformed building units, said building units including

A. a first block having a main body portion including first and second vertical faces, top and bottom parallel faces and first and second end faces, said first block further including means defining a pair of spaced apart protrusions extending outwardly from at least one of said vertical faces of said main body portion, said protrusions defining a vertical channel that is laterally centered on said one vertical face between said first and second end faces;

B. a second block having a main body portion including first and second vertical faces, top and bottom parallel faces and first and second end faces, said second block further including means defining a pair of spaced apart protrusions extending outwardly from at least one of said vertical faces of said second block main body portion, said second block protrusions defining a vertical channel that is laterally offset on said one vertical face toward the one of said first and second end faces disposed to the left of said one vertical face;

C. a third block having a main body portion including first and second vertical faces, top and bottom parallel faces and first and second end faces, said third block further including means defining a pair of spaced apart protrusions extending outwardly from at least one of said vertical faces of said third block main body portion, said third block protrusions defining a vertical channel that is laterally offset on said one vertical face toward the one of said first and second end faces disposed to the right of said vertical face;

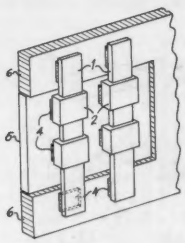
D. said first, second and third blocks being stackable end-to-end and in courses to form rigid, load-bearing structures including at least one sequence of three courses in which said first blocks are disposed in one of said courses of said sequence, said second blocks are disposed in another of said courses of said sequence with their protrusion defining means aligned with those of said first blocks, and said third blocks are disposed in the remaining course of said sequence with their protrusion defining means aligned with those of said first and second blocks so as to define vertical channels that extend from course-to-course in said structure, said end faces of said first, second and third blocks in said sequence of three courses thereby being offset from each other.

4,335,554
ADJUSTABLE SUPPORT DEVICE TO SECURE A PATCH IN HOLLOW WALLS

Charles E. Nicholson, 1703 W. 33rd. St., Chicago, Ill. 60608

Filed Jun. 26, 1980, Ser. No. 163,389
Int. Cl.³ E04G *23/02*
U.S. Cl. 52—514 **3 Claims**

1. An adjustable support device to secure a patch to hollow walls comprising an elongated support member that spans an aperture in the wall surface material, braces the patch material and is secured interchangeably to either said wall surface material or said patch material an interfacing element means that interfaces and secures interchangeably to either said wall surface material or said patch material said interfacing element means having a plurality of faces and firmly mounted on said elongated support element by a mounting means said mounting means allowing said faces to be of predetermined unequal lateral distances from the longitudinal center of said elongated support member said mounting means also allowing said faces to be transposable and longitudinally positionable on said

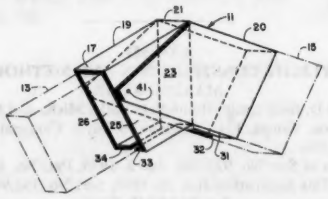


elongated support member a means to secure said elongated support member and said interfacing element means to either said wall surface material or said patch material the combination of said interfacing element means mounted in plurality by said mounting means on said elongated support member that supports said patch material of varied thickness and perimeter in said aperture of said wall surface material of varied thickness while allowing the exterior surfaces of said patch material and said wall surface material to be parallel.

4,335,555
RAFTER ASSEMBLY AND FIXTURES

Robert Southerland, Rt. 190 2 Box 96, Muldrow, Okla. 74948, and James Canition, St. Smith, Okla., assignors to Robert D. Southerland, Muldrow, Okla.

Filed Mar. 10, 1980, Ser. No. 128,379
Int. Cl.³ E04B *1/48, 7/06*
U.S. Cl. 52—639 **15 Claims**



1. In a pitched roof structure a fixture for joining a pair of rafters at the peak of a roof comprising

a top strap element having a transverse bend in the central portion thereof,

at least one first flap extending down from the side of one end of said strap and adapted to be fastened to the side of a first wood rafter, and

at least one second flap extending down from the side of the other end of said strap and adapted to be fastened to the side of a second wood rafter, an extension of said first flap overlapping said second flap,

said fixture being formed of one piece of sheet metal.

4,335,556
FRAME GIRDER FOR UNDERGROUND DRIFT AND SHAFT CONSTRUCTION

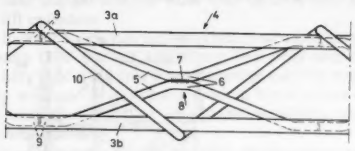
Edgar Arnold, Büron, Switzerland, assignor to Pantex-Stahl AG, Büron, Switzerland

Filed Apr. 15, 1980, Ser. No. 140,531

Claims priority, application Switzerland, Apr. 18, 1979, 3649/79

Int. Cl.³ E04H *12/10*; E04C *3/02*

U.S. Cl. 52—655 **4 Claims**



1. Frame girder for underground drift and shaft construction, comprising

(a) at least three retainer bars forming a polygon in cross section;

(b) means for connecting said retainer bars in fixed, spaced relation to one another, said means comprising struts corresponding in number to the number of retainer bars, each said strut being bent so as to define a central connecting region and two terminal regions inclined toward the corresponding retainer bar, said struts being located interiorly of said polygon formed by the cross sections of said retainer bars, the central connecting regions of said struts being rigidly connected together to form a strut cruciform with a central stiffening joint, the outer end of each said strut being attached to a said retainer bar.

4,335,557
SHEAR LOAD RESISTANT STRUCTURE

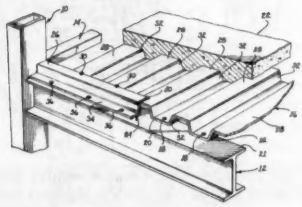
Virgil R. Morton, Redondo Beach, Calif., assignor to Verco Manufacturing, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 936,176, Aug. 23, 1978, Pat. No. 4,186,535. This application Oct. 19, 1979, Ser. No. 86,271

The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—741 **6 Claims**



1. A method for constructing earthquake resistant buildings having vertical load resisting members supporting horizontal load bearing members, said method comprising the steps of:

(a) attaching a fluted deck having webs alternatively interconnecting top and bottom flutes to a horizontal load bearing member, said attaching step including the step of attaching selected ones of the bottom flutes of the fluted deck to the horizontal load bearing member;

(b) locating a load translation means in mating relationship with selected pairs of adjacent webs and the interconnecting top flute of the fluted deck and attaching at least one of the mating webs and top flute with the load translation means; and

(c) attaching the load translation means to the horizontal load bearing member;

whereby the load translation means inhibits relative movement between the top and bottom flutes and buckling of the webs of the fluted deck due to horizontal shear loads imposed upon the deck and the load translation member translates the horizontal shear loads imposed upon the deck through the load bearing member to the vertical load resisting members.

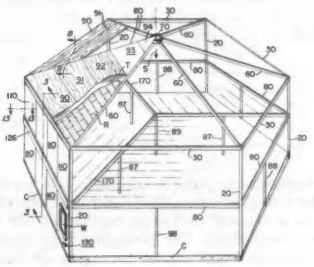
4,335,558
PREFABRICATED POLYGONAL BUILDING

Charles A. Caldwell, and William R. Dickson, both of Huntsville, Ala., assignors to Domain Building Systems Corporation, Huntsville, Ala.

Filed Aug. 22, 1980, Ser. No. 180,232

Int. Cl.³ E04B *7/00*; E04H *1/00*

U.S. Cl. 52—13 **15 Claims**



1. In a polygonal prefabricated building supported on a supporting surface and symmetrical about a vertical central axis, the building having upright columns equally spaced about said axis, the columns having lower ends supported on the surface and having upper ends joined to adjacent columns by perimeter beams, and the building having roof beams having outer ends joined to the upper ends of the columns and extending diagonally upwardly and inwardly toward said axis and terminating in inner ends located adjacent said axis, and the building having an apex member fixed to the inner ends of the roof beams and securing them together, the structural improvements wherein:

(a) the perimeter beams and the roof beams each comprise paired channel members each having a web portion and two flange portions, the paired channel members which comprise each beam being disposed with their web portions mutually adjacent to each other and separated by a fixed distance space, the web portions being joined by intermediate spacer means, and means securing together the paired webs and the intermediate spacer means to form a unitary beam;

(b) connector means fixed to the upper end of each column and each comprising a rigid beam-receiving tongue extending from the column toward each of the adjacent columns, and a rigid tongue extending from the connector means toward the central axis, the spacer means in each beam terminating short of the end of the beam, and a beam being coupled to each connector means tongue by passing the tongue into said space between its paired webs, and fastening means transfixing the webs and tongues to secure them together; and

(c) said connector means each comprising multiple metal bars fixed tangentially to a column and containing the column between them and having ends extending toward an adjacent column, and said tongues which are attached to the perimeter beams each comprising the ends to two adjacent bars pinched together and entering the space between the webs in the end of a perimeter beam; and each

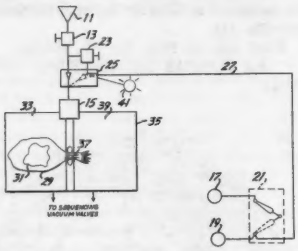
connector tongue which is attached to a roof beam comprising an additional tongue member secured to the metal bar which is located on the side of the column facing toward the center axis.

4,335,559

DUAL PRESSURE CLOSURE CLIPPING SYSTEM FOR CHAMBER EVACUATOR

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 4, 1979, Ser. No. 100,172
Int. Cl.³ B65B *31/02, 51/02*
U.S. Cl. 53—138 A **3 Claims**



1. Apparatus to provide selectable dual level closure pressure for a fluid actuated, fluid controlled, clip closure component on a vacuum packaging mechanism for evacuation of varying sized plastic film packaging bags containing articles being packaged, said vacuum packaging mechanism having at least two timer elements connected to provide for controllable selection of a longer evacuation time for larger bags and a shorter evacuation time for smaller bags in process, said apparatus comprising, in combination:

an electrical solenoid operated control valve connected in the fluid control system of the clip closure component, having first and second inlets selectably internally connectable to an outlet;

fluid connection means extending between a control fluid pressure source and the first inlet of said control valve;

a pressure regulator connected between said control fluid pressure source and the second inlet of said control valve, set to a pressure output less than that of said control fluid pressure source;

connection means between the outlet of said control valve and the fluid actuating system of the clip closure component; and

electrical circuit means between the timer elements and the electrical solenoid operated control valve, operably connected to place the control fluid pressure source in operable communication with the fluid actuating system of the clip closure component when a shorter evacuation time timer is in circuit, and to place the pressure regulator in operable communication with the fluid actuating system of the clip closure component when a longer evacuation time timer is in circuit.

4,335,560

METHOD FOR CONTAINERIZING ASPHALT

J. Ronald Robinson, Mesa, Ariz., assignor to Crafco, Inc., Phoenix, Ariz.

Filed Apr. 28, 1980, Ser. No. 144,301
Int. Cl.³ B65B *63/08, 3/04, 35/50*
U.S. Cl. 53—440 **5 Claims**

1. A method for containerizing asphalt in a plurality of manually handleable packages comprising the steps of:

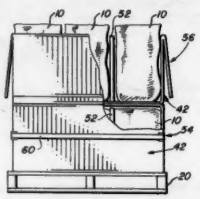
(a) preparing a plurality of manually handleable packages in the form of open top bags of thin-wall plastic material for receiving molten asphalt by supporting each of said packages in an upstanding open position within a different cardboard box of the type having closable top flaps;

(b) arranging a predetermined number of said prepared packages on a stationary pallet to provide said pallet with a first tier of said prepared packages;

(c) moving a molten asphalt dispenser vehicle means to a position adjacent said pallet;

(d) depositing a predetermined amount of molten asphalt from said molten asphalt dispensing vehicle means into each of said prepared packages which form said first tier;

(e) closing each of said prepared packages which forms said



first tier subsequent to deposition of the molten asphalt therein but prior to the cooling thereof by foldingly closing the open top bags of thin-wall plastic material;

(f) closing said closable flaps of said cardboard boxes to complete containerization of the molten asphalt in said packages of said first tier; and

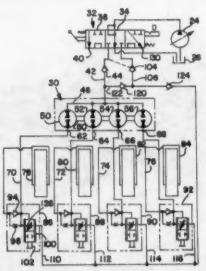
(g) repeating steps b, c, d, e, and f sequentially to provide a second tier of closed asphalt filled manually handleable packages with said second tier being stackingly arranged atop said first tier with this repeating step being accomplished prior to cooling of the molten asphalt containerized in said packages of said first tier.

4,335,561

HEADER HEIGHT POSITION CONTROL FOR A COTTON HARVESTER

William C. Swanson, and Jesse H. Orsborn, both of Clarendon Hills, Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Nov. 28, 1980, Ser. No. 210,986
Int. Cl.³ A01D *46/20, 47/00, 46/10*
U.S. Cl. 56—10.2 **15 Claims**



1. In a crop harvesting machine having a crop gathering device including header units independently pivoted to said crop gathering device, the improvement comprising:

a source of hydraulic fluid and a hydraulic fluid reservoir available to said crop harvesting vehicle;

a manual control valve hydraulically communicating with said source of hydraulic fluid;

a rotary flow divider having a plurality of rotary flow divider output ports, said rotary flow divider providing equalized

fluid delivery to said output ports, said rotary flow divider hydraulically communicating via a first delivery conduit with said manual control valve;

a plurality of independent single acting lift cylinders, one of each of said cylinders pivotally mounted between said crop gathering device and one of each independently pivoted header units for allowing the raising of said header units;

a first lockout check valve (**44**) in said first delivery conduit allowing flow from said manual control valve to said rotary flow divider;

a return line (**106**) providing hydraulic communication between said manual control valve and each of said single acting lift cylinders;

a second lockout check valve (**104**) in said return line normally preventing flow through said return line from said single acting lift cylinders to said manual control valve in communicating with said first delivery conduit, but effective to be pilot operated to allow flow when said first delivery conduit is pressurized; and

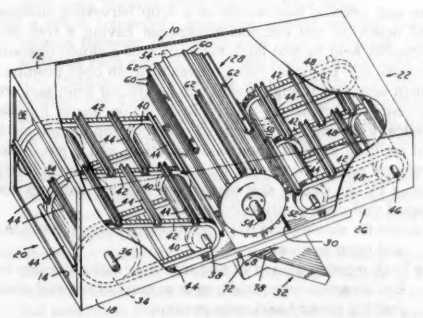
a plurality of hydraulic ground elevation sensing units, one of said ground elevation sensing units interposed between each of said single acting lift cylinders and said return line, each of said hydraulic ground elevation sensing units having a variable orifice valve assembly and a ground variation sensor associated therewith for sensing ground plane undulations and for affecting adjustment of said variable orifice valve assembly in response to ground plane undulations whereby said single acting lift cylinders will be supplied with fluid when said ground variation sensor directs said variable orifice valve assembly to be adjusted responsive to the ground plane.

4,335,562

ROCK TRAP FOR FARM VEHICLE

Alma D. Meyers, 2320 Gardner, Croswell, Mich. 48422; Robert L. Tesluck, and Thomas R. Tesluck, both of 7575 Brockway Rd., Yale, Mich. 48097

Filed Dec. 29, 1980, Ser. No. 220,426
Int. Cl.³ A01F *12/10*
U.S. Cl. 56—10.2 **8 Claims**



1. In a farm vehicle such as a combine or the like for moving crop material through an elongated hollow feeder house from a first end thereof to a second end;

said feeder house including a top, bottom and side walls and an aperture in the bottom through which rocks are to be ejected and a trap means for closing the opening in the bottom of the feeder house, the improvement comprising:

a rock drum rotatably mounted in said feeder house and substantially blocking the hollow interior thereof, said rock drum mounted intermediate the first and second ends of the feeder house and cooperating with said opening;

said rock drum including a plurality of U-shaped channels secured to the periphery of said drum for driving rocks toward said trap means, and bars secured to the periphery of said drum intermediate said channels for protecting said channels against damage from rocks;

first conveyor means for conveying the crop material from the rock drum toward the second end of the feeder house; said feeder house being free of said conveyor means between the rock drum and said opening; and

means for rotating said drum so that all crop material moves between the rock drum and the opening;

said rock drum slightly compressing the crop material for preventing rocks from entering said conveyor means;

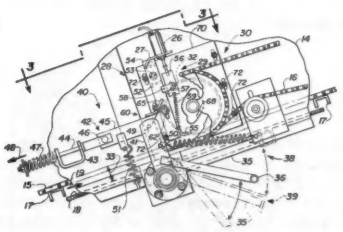
said rock drum for forcibly pushing rocks through said opening and against said trap means for opening said trap means to eject rocks both when said trap means is full and when sufficiently large rocks are positioned between said rock drum and said trap means.

4,335,563

COMBINE STONE TRAP LATCH RELEASE

Robert L. Rice, and Larimer J. Knepper, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Mar. 24, 1981, Ser. No. 246,983
Int. Cl.³ A01F *12/10*
U.S. Cl. 56—10.2 **10 Claims**



1. In a crop harvesting machine having a feeder house through which harvested crop is conveyed along a feed path, said feeder housing including an electronic non-crop foreign matter detection means for detecting the presence of non-crop foreign matter in said crop feed path and emitting a signal to indicate said detection; a trap door mounted on said feeder housing below said feed path for movement between a closed position in which crop material can move uninterruptedly along said feed path and an open position in which non-crop foreign matter can be ejected from said feed path; latching means for releasably holding said trap door in said closed position; release means operatively associated with said latching means to disconnect said latching means from said trap door and permit said trap door to move to said open position; a pinch roller rotatably mounted on said feeder housing a predetermined distance above said trap door such that said feed path passes between said pinch roller and said trap door, said pinch roller being adjustably mounted for selectively varying said predetermined distance; a cam member affixed to said pinch roller and rotatable therewith; a trip link mounted on said feeder housing for operatively cooperating with said release means to effect the release of said trap door from said latching means, said trip link being moveable between a passive position and an activation position in which said trip means is engageable with said cam member, the engagement of said cam member with said trip link causing an operative cooperation between said trip link and said release means to effect the release of said trap door from said latching means; actuation means connected to said trip link for moving said trip link from said passive position to said activation position upon the reception of the signal from said electronic detection means; and drive means for rotating said pinch roller during operation of said crop harvesting machine, the improvement comprising:

a bearing plate rotatably mounting said pinch roller and said

cam member, said bearing plate being adjustably attached to said feeder housing to move said pinch roller relative to said trap door and selectively vary said predetermined distance, said trip link being mounted on said bearing plate so that the positional relationship between said trip link and said cam member when said trip link is moved into said activation position does not change when said bearing plate is adjusted to vary said predetermined distance; and

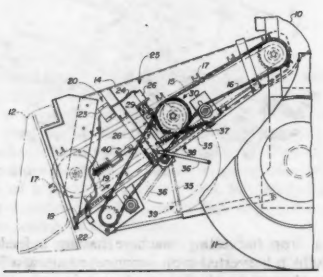
said release means including an elongated flange member affixed to said trip link projecting outwardly away from said feeder housing and a first roller connected to said latching means adjacent to said flange member, said cam member being operable when said trip link is moved to said activation position to engage said flange member with said first roller to effect the release of said trap door from said latching means.

4,335,564

ELECTRONICALLY ACTUATED STONE TRAP TRIP MECHANISM

Larimer J. Knepper, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 24, 1981, Ser. No. 246,985
Int. Cl.³ A01F *12/10*
U.S. Cl. 56—10.2 **8 Claims**



1. In a crop harvesting machine having a foreign matter detection mechanism for detecting non-crop foreign matter in the crop being harvested, a feeder housing having a feed path along which crop is conveyed during the harvesting process, and a foreign matter ejection mechanism including a trap door positioned beneath said feed path, said trap door being moveable between a closed position in which crop material flows uninterrupted along said feed path and an open position in which said non-crop foreign matter can be ejected from said feed path; said ejection mechanism further having a latching means operatively connected to said trap door to releasably hold said trap door in said closed position and a trip means operatively associated with said latching means and said foreign matter detection mechanism to release said trap door upon detection of said non-crop foreign matter so that said trap door can move to said open position for ejection of said non-crop foreign matter from said feed path, an improved trip means comprising:

a rotatable cam member mounted on said harvesting machine adjacent said latching means;

trip link mounted on said feeder housing between said cam member and said latching means, said trip link being moveable between a passive position wherein said trip link cannot engage said cam member and an activation position wherein said said trip link is engageable with said cam member, said trip link also being moveable when engaged with said cam member to cause the release of said trap door from said latching means;

release means operatively associated with said trip link and with said latching means to separate said latching means from said trap door and permit said trap door to move to said open position;

actuation means connected to said trip link and operatively associated with said foreign matter detection mechanism for moving said trip link between said passive position and said activation position upon detection of said non-crop foreign matter by said detection mechanism, such that when said trip link is moved into said activation position by said actuation means said cam member engages said trip link and causes movement thereof for effecting the release of said trap door from said latching means and permitting the ejection of said non-crop foreign matter; and

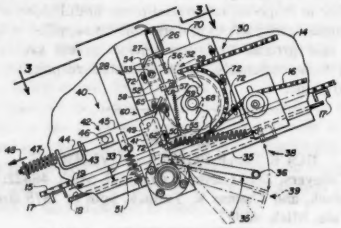
drive means for rotating said cam member.

4,335,565

LATCH MECHANISM FOR COMBINE HARVESTING ELECTRONIC AND MECHANICAL STONE DETECTORS

Larimer J. Knepper, and John J. Komancheck, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Mar. 24, 1981, Ser. No. 246,986
Int. Cl.³ A01F *12/10*
U.S. Cl. 56—10.2 **17 Claims**



1. A latch mechanism for a non-crop foreign matter detection and ejection mechanism on a crop harvesting machine, said detection and ejection mechanism having a trap door releasably held by said latch mechanism in a closed operative position, said trap door being moveable to an open position in which non-crop foreign matter can be ejected from said crop harvesting machine, an electronic detection means for electronically sensing the presence of said non-crop foreign matter and emitting a signal upon said detection, and a mechanical detection means for sensing the presence of non-crop foreign matter by the size of said matter and forcing said trap door toward said open position, comprising:

means for moving said trap door from said closed position to said open position;

a latch member affixed to said trap door and moveable in a first direction when said trap door moves from said closed position toward said open position;

a latch lock member releasably connected to said latch member to hold said trap door in said closed position;

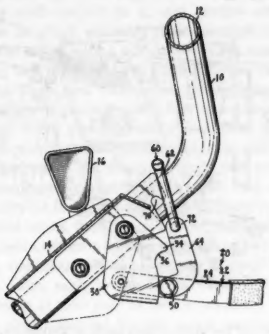
release means operatively associated with said latch lock member for effecting the release of said latch member from said latch lock member to permit said trap door to move to said open position upon detection of said non-crop foreign matter, said release means being operable when said mechanical detection means forces said trap door toward said open position; and

trip means operatively associated with said electronic detection means and with said release means to receive the signal emitted from said electronic detection means and cause said release means to effect the release of said latch member from said latch lock member and permit the trap door to be moved to said open position.

4,335,566
CONTROL SYSTEM FOR POWER EQUIPMENT

Lyle E. Hurd, Bloomington, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Jan. 12, 1981, Ser. No. 224,701
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—11.8 **8 Claims**



1. An improved outdoor power equipment unit of the type having a housing; a handle assembly connected to the housing which includes two spaced upwardly extending handle rods; an active power driven element carried on the housing for performing a ground grooming action; clutch means for selectively activating the active element; and selectively operable traction drive means for moving the housing over the ground; wherein the improvement comprises:

(a) a pair of generally opposed traction drive links each of which is pivotally mounted on the handle rods at substantially identical locations adjacent the upper ends of the handle rods;

(b) means for operatively connecting one of the traction drive links to the traction drive means for activating the same upon rotation of the traction drive links;

(c) a single transversly extending control member which extends between the handle rods and is pivotally journalled at each end on one of the traction drive links for free rotation relative to said links, wherein the control member has a neutral position and is pivotal therefrom about its pivot axis in a first direction for movement from the neutral position progressively through first and second engaged positions;

(d) means for operatively connecting the control member to the clutch means for activating the same during rotation of the control member from its neutral position towards its first engaged position; and

(e) means for rotatively coupling the control member to the traction drive links in the first engaged position of the control member such that continued rotation of the control member in the first direction towards its second position rotates the traction drive links to activate the traction drive means, whereby a single moveable control member activates both the clutch means and the traction drive means during rotation from the neutral position to the second engaged position.

4,335,567
BAGGING FILAMENT MOWER

Robert C. Comer, Hopkins, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Sep. 2, 1980, Ser. No. 182,986
Int. Cl.³ A01D *50/00, 55/18*
U.S. Cl. 56—12.7 **10 Claims**

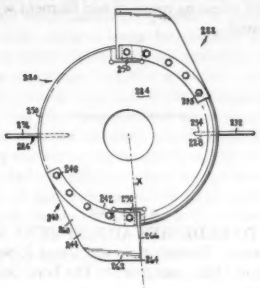
1. A vegetation cutting device, which comprises:

(a) a housing suited for movement over a ground surface;

(b) rotatable support means carried on the housing and having a perimeter;

(c) a flexible line cutting element secured to the support means for rotation therewith, wherein the flexible line cutting element includes a free end portion that extends in a cutting plane radially out past the perimeter of the support means to sever the vegetation; and

(d) means for agitating the vegetation to facilitate cutting thereof, wherein the vegetation agitating means is at least one rotatable sail member located above the cutting plane, wherein the sail member is sufficiently flexible such that it will deform under impact with a body member of a person

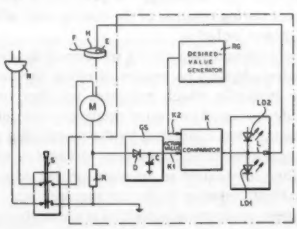


using the lawn mower without severing the body member, wherein the sail member is operatively connected to the support means for conjoint rotation therewith in a cantilever manner such that the sail member has an unsupported radial outer side, the sail member and the cutting element being unconnected except for their common rotation with the support means, and wherein the sail member extends radially out past the perimeter of the support means sufficiently far to be located above at least 25% of the length of the free end portion of the flexible line cutting element during rotation thereof, whereby the agitating means effects better agitation of the vegetation being cut by the free end portion.

4,335,568
FILAMENT-TYPE VEGETATION TRIMMER WITH AUTOMATIC LINE SENSOR

Max Langenstein, Illertissen, Fed. Rep. of Germany, assignor to Max Langenstein Feld- und Gartengeräte GmbH & Co., Illertissen, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,398
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029056
Int. Cl.³ A01D *55/30*
U.S. Cl. 56—12.7 **6 Claims**



1. A filament-type vegetation trimmer comprising:

an electric motor;

a head rotatable by said motor;

a supply of a filament in said head, with said filament extending from said head, whereby on rotation of said head by said motor the extending filament section can cut vegetation;

means for detecting the current consumption of said motor and for generating an actual-value output corresponding thereto;

means for generating a set-point output corresponding to the current consumption of said motor when said filament is extending from said head by less than a predetermined distance; and

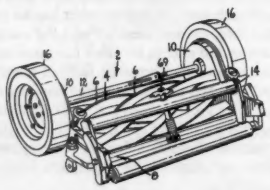
means for comparing said outputs and generating a signal when said actual-value output is less than said set-point output, and means in said head for responding to said signal and releasing more of said filament when said signal is generated.

4,335,569

REEL TO BEDKNIFE ADJUSTMENT SYSTEM

Donald A. Keeney, Bloomington, and David J. Scherbring, Shakopee, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Oct. 22, 1980, Ser. No. 199,666
Int. Cl.³ A01D *55/20*
U.S. Cl. 56—249 **15 Claims**



3. A reel type mower, which comprises:

(a) a rotatable cutting reel having at least one cutting element;

(b) an elongated bedknife adjacent the cutting reel for cooperation with the cutting reel to sever vegetation between the bedknife and the cutting element, wherein either the bedknife or the cutting reel is movable relative to the other component to define a movable component whose position can be varied relative to the other component; and

(c) control means for adjusting the position of the movable component during rotation of the cutting reel, wherein the control means includes:

(i) means for monitoring during rotation of the cutting reel a selected physical parameter of either the cutting reel or the bedknife which indicates whether or not the bedknife is properly adjusted relative to the cutting reel;

(ii) actuator means controlled by the monitoring means for moving the movable component towards or away from the other component to maintain proper adjustment of the bedknife relative to the cutting reel; and

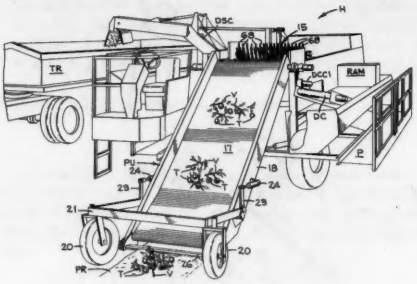
(iii) wherein an electrical potential is normally maintained between the bedknife and the cutting reel with this potential disappearing whenever the cutting element is in contact with the bedknife, and wherein the selected physical parameter which is monitored is the electrical potential.

4,335,570

HARVESTING SHAKER FOR CROPS SUCH AS TOMATOES OR THE LIKE

Richard W. Fitzmaurice, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Aug. 28, 1980, Ser. No. 182,259
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—327 R **16 Claims**



1. In a harvester for vine crops, such as tomatoes, wherein the vines are severed near ground level, removed from the ground, and moved to a position within the harvester framework, an improved means for disengaging fruit from the vine, comprising:

a shaker head having a plurality of radially projecting tines;

means for mounting the shaker head on the harvester framework for rotation about a substantially horizontal axis;

means for inducing a rotative oscillation in the shaker head; and

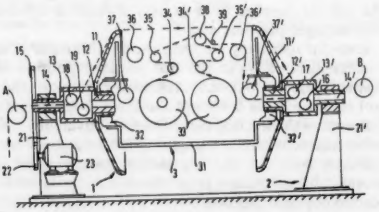
a support conveyor assembly mounted on the harvester in fixed position relative to the framework and adjacent to said shaker head and operating to support the severed vines in position so that the tines on the shaker head penetrate the vines and induce a shaking action therealong which disengages the fruit from the vines.

4,335,571

APPARATUS FOR CABLING WIRES

Luciano Tarantola, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 3, 1979, Ser. No. 26,550
Claims priority, application Italy, May 9, 1978, 23149 A/78
Int. Cl.³ D07B *3/12, 3/02*
U.S. Cl. 57—58.52 **5 Claims**



1. In an apparatus for cabling metallic cords adapted for use as reinforcing elements of an elastomeric structure, said cords resulting from the union of a group of wires according to a prefixed geometrical configuration obtained and maintained through the means of appropriate deformations by bending and torsion applied to the wires, said apparatus comprising a carrier for supporting at least one pay-off bobbin for at least some of said wires, inside which the said bobbin or bobbins are freely mounted for rotation, each one around its own axis, a cage

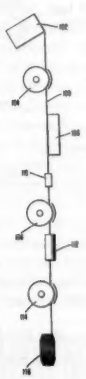
adapted for guiding the said wires along a predetermined trajectory, a frame for supporting the said cage while permitting it to rotate around its own axis, means adapted for maintaining said cage in rotation, means adapted for unwinding said wires from their respective pay-off bobbins and for drawing them through the cabling apparatus in an advancing direction, and means adapted for collecting the resulting cords, said carrier being mounted in said cage coaxially with the cage and freely rotating with respect to it, said carrier and said cage having hollow bearings whereby their terminal ends can be traversed by the wires, along a trajectory that coincides with the axis of said bearings from the interior of the carrier to the exterior of the cage and vice-versa, means being provided inside said carrier for guiding said wires according to a trajectory developed from one extremity and from said pay-off bobbins at the other extremity of the carrier, distanced from said carrier axis within the space between said extremities of the carrier—the improvement wherein inside said carrier there is provided a device for permanently deforming by bending at least part of said wires, first means for collecting at least some of the wires coming from a diverse direction and for disposing them parallel, coplanar and adjacent one of the other and for guiding them onto said device for deforming, and second means for guiding at least part of said wires along a trajectory distinct from that followed by the wires passing onto said bending device, but having in common with the latter path one point upstream said first means and another point downstream said bending device.

4,335,572

PROCESS FOR PRODUCTION OF TEXTURED YARN USEFUL IN THE FORMATION OF A CREPE FABRIC

John B. Pope, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 139,146, Apr. 10, 1980, abandoned.
This application Apr. 27, 1981, Ser. No. 258,203
Int. Cl.³ D02G *1/02*
U.S. Cl. 57—283 **23 Claims**



1. A texturing process for the production of a space textured yarn useful in the formation of a crepe fabric comprising:

(a) continuously passing a multifilamentary polymeric yarn capable of undergoing false twist texturing to a yarn texturing friction disc aggregate having an entrance end and an exit end,

(b) continuously passing said multifilamentary polymeric yarn in contact with said yarn texturing friction disc aggregate which rotates at a disc surface speed to yarn speed of approximately 2.2:1 to 3.1:1 whereby a relatively tight twist which averages approximately 40 to 120 turns per inch is imparted to said multifilamentary polymeric yarn immediately prior to reaching said entrance end of said friction disc aggregate,

(c) continuously passing said multifilamentary polymeric yarn from said exit end of said friction disc aggregate to a roll which is rotated at a speed sufficient to satisfy said disc surface speed to yarn speed ratio of step (b) and with said yarn under a tension which facilitates periodic slippage of said multifilamentary polymeric yarn with respect to said friction disc aggregate in step (b) whereby recurring relatively tightly twisted areas measuring approximately 0.125 to 1.25 inch are substantially maintained along the length of said yarn intermediate recurring textured areas measuring approximately 0.125 to 1.25 inch which include a twist in the opposite direction which are created at the exit end of said friction disc aggregate,

(d) heating said multifilamentary polymeric yarn in a relaxing zone while under a lesser longitudinal tension than employed in steps (a), (b), and (c) sufficient to maintain said yarn at a constant length or to permit up to approximately a 20 percent longitudinal yarn shrinkage whereby bulking of said recurring textured areas which include a twist in said opposite direction occurs while substantially maintaining said recurring relatively tightly twisted areas, with said relatively tightly twisted areas retaining at least 50 percent of said twist achieved immediately prior to reaching said entrance end of said friction disc aggregate, and

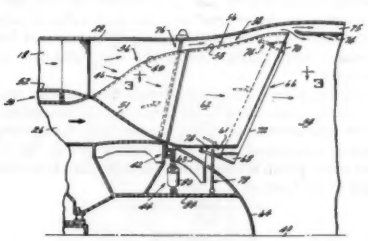
(e) collecting the resulting yarn.

4,335,573

GAS TURBINE ENGINE MIXER

Jack D. Wright, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sep. 2, 1970, Ser. No. 78,333
Int. Cl.³ F02K *3/10, 3/04*
U.S. Cl. 60—261 **10 Claims**

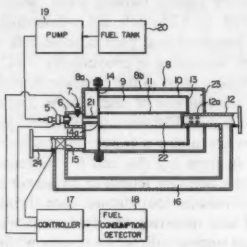


1. A convoluted annular mixer for use in a gas turbine engine and of the type defining an annular array of radially and axially elongated, alternating first and second chutes, said mixer including an upstream portion a and downstream portion, the first and second chutes of said upstream portion adapted to receive, respectively, an inner annular hot gas stream and an outer annular fan stream of said engine, and means for indexing said downstream portion from a first position, wherein the upstream first and second chutes are disposed in fluid flow communication, respectively, with the downstream first and second chutes, and a second position wherein such fluid flow communication is reversed, whereby the temperature of said downstream mixer portion and, hence, emitted infrared radiation therefrom may be selectively reduced.

4,335,574
CARBON PARTICLES REMOVING DEVICE

Susumu Sato, Okazaki; Yukihisa Takeuchi, Aichi, and Masahiro Tomita, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 9, 1981, Ser. No. 223,723
Claims priority, application Japan, Feb. 15, 1980, 55-17977
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—311 **2 Claims**



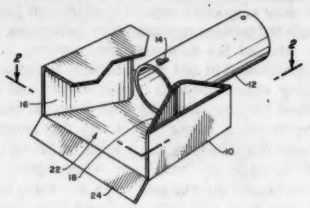
1. A device for removing fine carbon particles from exhaust gas emitted by an internal combustion engine, comprising:
- a means providing a first path and a second path through which said exhaust gas may be alternately made to flow, said paths having a juncture;
- a filter disposed in said first path and adapted to collect fine carbon particles suspended in said exhaust gas;
- no filter of the kind and character of said filter being disposed in said second path;
- a heating means disposed in said first path and adapted to burn said fine carbon particles collected by and accumulated on said filter;
- a valve disposed at said juncture of said first and second paths and adapted to selectively open and close said first and second paths;
- means for indirectly detecting the amount of said fine carbon particles collected by and accumulated on said filter by detecting the amount of fuel consumed by the engine;
- and means for controlling the valve and the heating means together so that when the amount of said fine carbon particles collected by and accumulated on said filter has reached a predetermined amount, said valve is actuated temporarily to open said second path while said heating means is temporarily activated to burn said fine carbon particles;
- said heating means including a small-sized burner attached to a holder such that a flame thereon is introduced into the inner cylinder of said filter, a glow plug for igniting the burner, a fuel tank adapted to supply fuel to the burner and a fuel pump arranged for pumping fuel from the fuel tank to the burner.

4,335,575
EXHAUST BACK PRESSURE REDUCER FOR INTERNAL COMBUSTION ENGINE

Basilio Pagliuca, 18200 Killion, Apartment 15, Tarzana, Calif. 91356

Filed Nov. 19, 1979, Ser. No. 95,835
Int. Cl.³ F01N *5/04*
U.S. Cl. 60—319 **8 Claims**

1. An exhaust gas pressure reducer for an internal combustion engine comprising; a tubular member adapted to fit over the end of the exhaust pipe of said internal combustion engine; a housing having top and bottom plates mounted on said tubular member; a venturi in said housing, said venturi having a pair of inwardly flaring arcuate side members located intermediate said top and bottom plates and being in spaced apart relation to form a venturi throat approximately equal in cross-sectional area to the cross-sectional area of the end of said tubular member; air deflecting means at the exit of said venturi for deflecting air flowing around the external surface of said housing away from said exit to create a low pressure area at said exit to

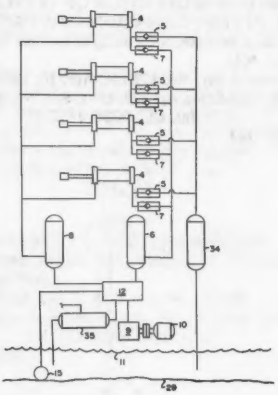


assist in discharging hot gases from said internal combustion engine.

4,335,576
WAVE ENERGY DESALINIZATION

Harold H. Hopfe, 65 Pioneer Dr., Longmeadow, Mass. 01106

Continuation-in-part of Ser. No. 832,610, Oct. 6, 1977, abandoned, Ser. No. 935,586, Aug. 21, 1978, abandoned, Ser. No. 943,286, Sep. 18, 1978, abandoned, and Ser. No. 3,744, Jan. 15, 1979, Pat. No. 4,204,406. This application Jan. 7, 1980, Ser. No. 109,876
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—398 **20 Claims**



1. A device for producing fresh water from salt sea water by utilizing the hydrodynamic energy of waves, comprising:
- a buoyant platform;
- mooring means for mooring the platform at sea;
- pump means mounted on the platform and connected to the mooring means;
- a reservoir for containing pressurized sea water connected to the pump means;
- a reverse osmosis desalination system for extracting fresh water from the sea water connected to the reservoir means;
- hydraulic flow control means for causing the pump means to pump sea water into the sea water reservoir, as motion of the buoyant platform is produced due to the passing of waves beneath it;
- measuring means for measuring parameters of the sea adjacent the buoyant platform; and
- a control device connected to control the pressure in the sea water reservoir and flow of sea water from the reservoir

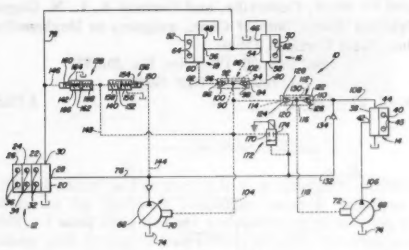
through the desalination system in dependence upon the parameters of the sea determined by the measuring means.

4,335,577

HYDRAULIC SYSTEM HAVING VARIABLE DISPLACEMENT PUMPS CONTROLLED BY POWER BEYOND FLOW

Raymond J. Lobmeyer, Hudson, and James A. Miller, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 19, 1980, Ser. No. 161,082
Int. Cl.³ F15B *13/06, 13/09*
U.S. Cl. 60—421 **5 Claims**



1. In a hydraulic system including a variable displacement pump, a pressure responsive displacement controller connected to the pump for decreasing the displacement thereof in response to receiving increasing signal pressure, a primary function control valve having a supply inlet connected to the pump, service ports adapted for connection to a primary function and a primary function power beyond port, first and second secondary function control valves having respective supply inlets coupled to the primary function power beyond port, respective service ports adapted for connection to first and second secondary functions, and first and second secondary function power beyond ports, the primary and first and second secondary function control valves each including a demand responsive flow divider for dividing flow between the respective power beyond and service port of each valve, when the latter are actuated, respectively, in accordance with the fluid required by the primary and first and second secondary functions, the improvement comprising: shuttle valve means coupled to the first and second secondary function power beyond ports and to the pump displacement controller and being operable for routing the lesser of the fluid pressure existing at the first and second secondary function power beyond ports to the pump displacement controller to thereby automatically control the pump to satisfy the highest demand of the first and second secondary functions.

4,335,578

SOLAR POWER CONVERTER WITH POOL BOILING RECEIVER AND INTEGRAL HEAT EXCHANGER

Douglas B. Osborn, and Robert L. Pons, both of Mission Viejo, Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed May 30, 1980, Ser. No. 154,723
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.8 **10 Claims**

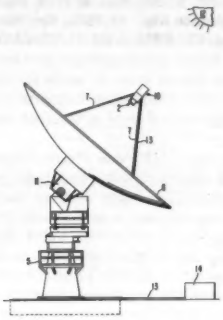
1. An internal cavity solar power converter comprising:

a solar receiver formed between two concentric, generally cylindrical sleeves, said receiver substantially filled with a pool of secondary fluid which changes phase from a liquid to a vapor upon the impingement of solar radiation thereon;

an annular seal connecting said sleeves at a first end thereof;

a fixed aperture formed by said annular seal and disposed to permit concentrated solar radiation to impinge upon an interior surface of said receiver; and

a heat exchanger coupled to an end of said receiver opposite its apertured end, having a first chamber adapted to receive secondary fluid from said solar receiver, said ex-



changer further having a second chamber containing a primary fluid;

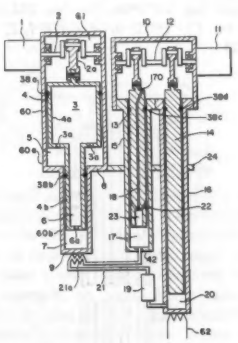
wherein said secondary fluid undergoes a phase change from a vapor to a liquid as it gives up heat to said primary fluid within said heat exchanger.

4,335,579

REFRIGERATING SYSTEM

Hitoshi Sugimoto, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 16, 1980, Ser. No. 187,832
Claims priority, application Japan, Sep. 17, 1979, 54-119014
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **12 Claims**

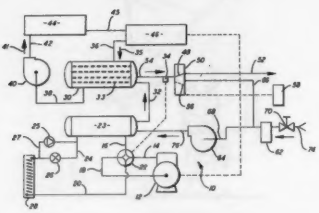


1. A refrigerating system comprising first refrigerating means having cooling surface means, second refrigerating means including compression piston-cylinder means, heat radiating means connected with said compressing piston cylinder means and arranged in heat exchange relationship with said cooling surface means in the first refrigerating means and expansion piston-cylinder means connected with said heat radiating means, pre-cooling means for transmitting heat from said piston-cylinder means in said second refrigerating means to said first refrigerating means.

4,335,580
REFRIGERATION UNIT WITH WATER COOLED CONDENSER

William J. Hannett, Jamesville; Thomas E. Brendel, and David S. Wilson, both of Fayetteville, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 92,297, Nov. 8, 1979, Pat. No. 4,295,344.
This application Mar. 23, 1981, Ser. No. 245,880
Int. Cl.³ F25B 7/00, 27/02, 13/00
U.S. Cl. 62—79 6 Claims

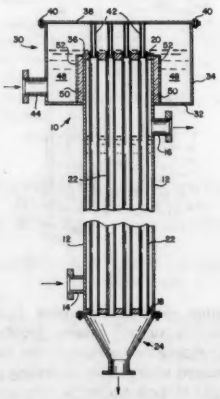


1. A method of operating an engine-driven refrigeration unit comprising the steps of:
- delivering water to a first heat exchanger of the refrigeration unit;
- supplying the water from the first heat exchanger to a second heat exchanger for cooling a relatively warm fluid delivered thereto thereby increasing the temperature of the water and reducing the temperature of the relatively warm fluid; and
- supplying the water discharged from the second heat exchanger to the inlet of the first heat exchanger when the first heat exchanger is functioning as a refrigerant evaporator.

4,335,581
FALLING FILM FREEZE EXCHANGER

James A. Nail, Carol Stream, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 12, 1981, Ser. No. 292,265
Int. Cl.³ B01D 9/04; C02F 1/22
U.S. Cl. 62—123 7 Claims

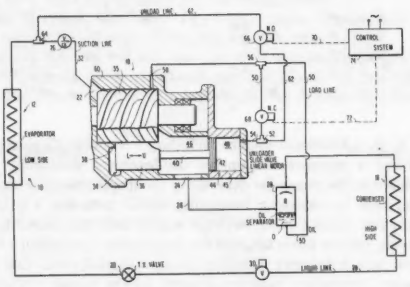


1. A falling film freeze exchanger comprising:
- a plurality of spaced apart vertical freeze tubes secured in, and penetrating, an upper tube sheet and a lower tube sheet;
- a shell around the tube sheets and connected thereto;
- the shell having a cooling fluid inlet and a cooling fluid outlet for circulating cooling fluid around the tubes;
- a header surrounding and joined to the upper part of the shell and extending above the top tube sheet and laterally outwardly from the shell;
- means to deliver a liquid process feed stream into the header; and
- a layer of insulation surrounding that part of the shell surrounded by the header.

4,335,582
UNLOADING CONTROL SYSTEM FOR HELICAL SCREW COMPRESSOR REFRIGERATION SYSTEM

David N. Shaw, Unionville, and Norman A. L. N. Gagnon, Windsor Locks, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Feb. 20, 1981, Ser. No. 236,372
Int. Cl.³ F04B 49/00
U.S. Cl. 62—196 R 3 Claims



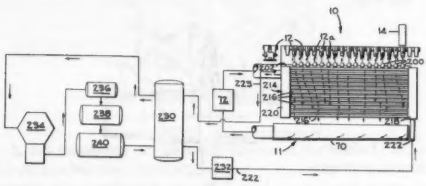
1. In a closed loop refrigeration system including
- a compressor,
- a condenser, and
- evaporator,
- conduit means connecting said compressor, condenser and evaporator in series, in that order within a closed loop,
- said conduit means including an expansion means upstream of said evaporator,
- and wherein said compressor comprises;
  - a helical screw rotary compressor having a low pressure suction port and a high pressure discharge port,
  - an unloader slide valve movable between compressor full load and full unload position,
  - a linear drive motor including a slidable piston sealably and slidably mounted within a cylinder and forming inboard and outboard chambers on opposite sides of said piston, said inboard chamber being open to the compressor discharge pressure and tending to shift the slide valve to full compressor unload position and wherein said conduit means further includes means for selectively connecting said outboard chamber to the compressor discharge pressure tending to shift said slide valve to full compressor load position,
  - the improvement comprising:
    - a check valve within said conduit means between said evaporator and said compressor suction port,
    - means normally closing off said outboard chamber to said system high side pressure and
    - means for normally opening said outboard chamber to said system low side pressure upstream of said check valve means;
    - whereby, upon compressor shut down, the outboard chamber is vented to the system low side pressure, while the inboard chamber is open to the system high side pressure, such that during the time delay to

achieve equalization of system high and low side pressures, said unloader piston and said slide valve are automatically shifted to compressor full unload position.

4,335,583
APPARATUS FOR FREEZING CONFECTIONS

Ronald J. Billett, Sunnyvale, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,843
Int. Cl.³ A23G *9/00*
U.S. Cl. 62—345 **8 Claims**



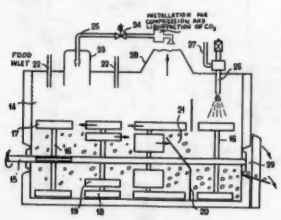
1. An apparatus for freezing confection material comprising:

mold means for receiving confection material including a plurality of mold cups that are arranged in several rows and including walls extending transversely between the upper ends of adjacent cups in each row, said mold cups having polygonal cross-sectional configurations having wide and narrow side faces with the wide side faces extending transversely of the associated row of mold cups, means for conveying said mold means along a path of travel extending parallel to the wide side faces of the mold cups, several rows of nozzles disposed under said mold means along said path of travel, the nozzles being spaced in uniform intervals in alignment with said transverse walls between adjacent cups, and means for supplying coolant under pressure to said nozzles being oriented to force jets of coolant from said nozzles upwardly to impinge against said transverse wall portions between adjacent mold cups in the overlying row of mold cups.

4,335,584
PROCESS AND APPARATUS FOR QUICK-FREEZING OF FOOD PRODUCTS

Andre Lermuzeaux, Sucy-En-Brie, France, assignor to L'Air Liquide, Societe Anonyme pour d'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Division of Ser. No. 897,534, Apr. 18, 1978, Pat. No. 4,265,921. This application Aug. 27, 1980, Ser. No. 181,677
Claims priority, application France, Apr. 25, 1977, 77 12339
Int. Cl.³ F25D *3/12*
U.S. Cl. 62—388 **14 Claims**



1. Apparatus for quick freezing liquid or pasty food products by adding same to a bed of carbon dioxide snow, the mixing of the food product being performed in three zones, respectively, in a first zone for freezing where the product to be frozen is mixed with the carbon dioxide snow, then in a second zone wherein separation of frozen granules of suitable size from fine snow and fines of frozen product occurs, and a third zone of sublimation of the excess snow and stabilization of the temperature of the frozen product by the regulated addition of an additional quantity of said liquid or pasty food product to the third zone to regulate the removal temperature to that desired for the frozen granules,

comprising a large, covered, insulated, parallelipipedic vat, divided into said three zones, an input zone corresponding to said first zone, a central zone corresponding to said second zone, and an end zone corresponding to said third zone, said vat being equipped along its entire length with a rotor provided with arms arranged so that the movement of the product in the input zone has at most a slight axial downstream direction,

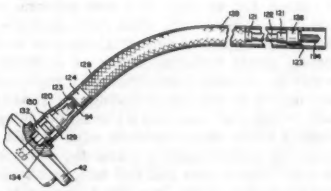
the rotor arms in the central zone of the apparatus comprising means to move large frozen food particles downstream and small frozen food particles upstream, said means including a double series of blades spaced radially apart on said arms, the outer blades being oriented to move small frozen food particles upstream and the inner blades being oriented to move large frozen food particles downstream, and the number of rotor arms being less in the end zone;

the central and end zones of the vat being partially separated by a partition and connected by a chute in this partition; the upper part of the vat being provided in the input zone with input pipes for the food product regularly distributed around a flared pipe for the carbon dioxide snow, in the central zone of the device means for recovering the gaseous carbon dioxide and in the end zone a spraying means for the addition of additional liquid or pasty food product to be frozen.

4,335,585
LAWN TRIMMER CONSTRUCTION

Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Division of Ser. No. 871,603, Jan. 23, 1978, Pat. No. 4,188,719. This application Jan. 7, 1980, Ser. No. 110,125
Int. Cl.³ F16C *1/02*; A01D *35/26*
U.S. Cl. 464—52 **8 Claims**



1. A tubular shaft assembly for structurally and drivingly connecting an upper power head to a lower tool head in a lawn trimming tool or the like, said assembly including a bent portion to dispose its opposite ends at an angle to each other, comprising an outer frame shaft of relatively large diameter and structural strength, an inner sheath tube of relatively smaller diameter formed of rigid but bendable tubing and disposed substantially coaxially of the frame tube, bushing means interposed between the two tubes to support the inner sheath tube from and in fixed relation with the outer frame tube with the ends of the sheath tube parallel with the axis of the frame tube, the frame tube having a lower end portion projecting beyond the end of the sheath tube and expanded to form a sleeve of enlarged diameter and predetermined length joined to the frame tube by an integral expansion section, an arbor assembly mounted in said sleeve and having outer stationary bearing means in locating engagement with said expansion section and having an arbor bearing rotatably mounted in such means in coaxial alignment with the lower end of the sheath tube, the outer end of said frame shaft sleeve being deformed

inward to secure the stationary bearing means in place in the sleeve and against said expansion section.

4,335,586
SHAFT-DISC ASSEMBLY

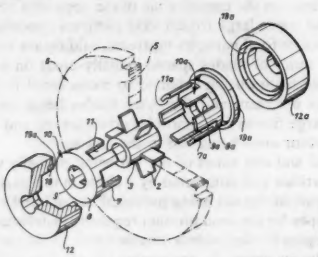
Richard Kochendorfer, and Helmut Vogler, both of Stuttgart, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Nov. 7, 1979, Ser. No. 92,039

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848355

Int. Cl.³ F16D *3/17*

U.S. Cl. 464—81 **8 Claims**



1. In a shaft and disc assembly of the type including a disc mounted coaxially on a shaft for rotation therewith, said assembly comprising

(a) a shaft;

(b) a disc containing a central aperture having an internal diameter greater than the external diameter of said shaft, said disc also containing radial slots extending from the central aperture, said disc being mounted concentrically on said shaft;

(c) centering means mounted on the shaft, said centering means including web portions extending generally parallel to the shaft axis and lying against the internal surface of said central disc aperture, said web portions, under the action of centrifugal force when the assembly is rotating, being resiliently pressed against said internal surface, said centering means including a pair of centering sockets mounted on opposite sides of the disc, respectively, each socket having an end face extending substantially perpendicular to the shaft axis, and a plurality of integral webs extending axially from the outer edge of said end face through the central aperture in said disc and being free at their ends remote from said end face, said sockets being arranged so that webs from the two sockets alternate around a circumferential surface formed thereby; and

(d) a plurality of tongues rigidly fixed to the shaft and extending radially therefrom into the radial slots contained in said disc.

4,335,587
UNIVERSAL COUPLING MEMBER FOR TWO SHAFTS AND METHOD OF MANUFACTURING SUCH A COUPLING MEMBER

Dieter Thomamueller, Bruckmuehl, and Klaus Brunsch, Wolfratshausen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,186

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927955

Int. Cl.³ F16D *3/78*; B65H *81/00*

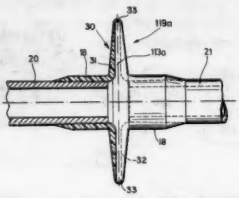
U.S. Cl. 64—11 B **5 Claims**

1. A method of making a universal coupling member of fiber compound material having a disk shaped flange between two shaft components and a longitudinal axis for transmitting torque between a driving member and a driven member, comprising the following steps:

(a) assembling on a portion (**12**) of a winding mandrel (**11**), a core (**13**) and a sleeve (**14**) to form a winding mold, said core having a larger diameter than said mandrel or sleeve, said core further having substantially the form and dimensions of said disk shaped flange,

(b) winding a fiber material onto said winding mold so that the individual turns extend at an angle of about ±45° relative to said longitudinal axis to form a wound structure including said disk shaped flange and said shaft components,

(c) impregnating said fiber material prior or after said winding step,



(d) compressing the wound structure in the direction of said longitudinal axis to form said disk shaped flange, and

(e) curing the wound structure.

5. A universal coupling member of fiber compound material manufactured according to claim **1**, comprising two bushings (**18**) and a single hollow disk flange (**30**) interconnecting said bushings (**18**), said hollow disk flange having two substantially radially extending wall portions (**31, 32**) the wall thickness of which diminishes radially outwardly, and a curved circumferential wall portion (**33**) having the smallest wall thickness relative to said wall portions, said circumferential wall portion operatively interconnecting said radially extending wall portions (**31, 32**), whereby a substantial torsional rigidity and axial deformability are achieved.

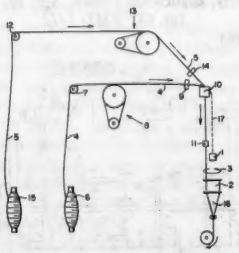
4,335,588
YARN PROCESS AND APPARATUS

Cornelis Bos, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Jan. 3, 1978, Ser. No. 866,685

Int. Cl.³ D04B *35/22*

U.S. Cl. 66—125 A **1 Claim**



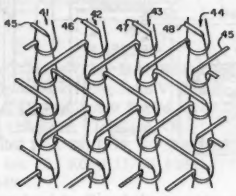
1. A process for bulking multifilament yarns on a circular knitting machine comprising the steps of feeding at least one multifilament yarn from a yarn supply to a blowing zone, then to a knitting zone; supplying a stream of gaseous fluid under super atmospheric pressure to the blowing zone while a drive for a knitting needle cylinder in said knitting zone is in operation; and gradually reducing the stream of gaseous fluid to the blowing zone after the drive is switched off.

4,335,589

GROUNDING STRUCTURES COMPRISING COMPOSITE KNITTED FABRICS

Gary L. Flasher, Phoenixville, Pa., assignor to Bentley-Harris Manufacturing Co., Lionville, Pa.

Filed Jun. 30, 1980, Ser. No. 164,090
Int. Cl.[3] D04B *7/16, 21/00*
U.S. Cl. 66—202 3 Claims



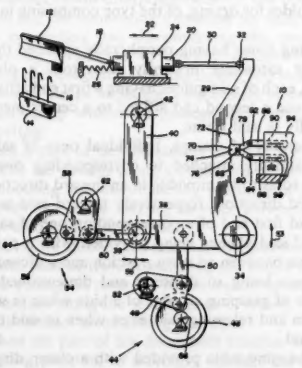
1. An elongated grounding component particularly adapted for dissipating electrostatic charges, comprising bare strands of electrically-conductive material, said component comprising at least one knitted tube having a given number of wales of needle loops extending longitudinally of said grounding component, any given wale of needle loops having loops alternating in sequence between loops of first and second electrically-conductive strands throughout the length of the grounding component, the first of said strands alternately forming needle loops in a wale on one side of the given wale and the second of said strands alternately forming needle loops in a wale on the other side of said given wale, said tube being flattened to insure intimate electrical contact between the strands of the knitted tube to assure multiple conductive paths between said strands throughout the length of said grounding component.

4,335,590

GUIDEBAR SHOGGING LINKAGE ARRANGEMENT FOR WARP KNITTING MACHINES

Gerhard Bergmann, Obertshausen, and Heinz Wade, Rodgau, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,020
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2926929
Int. Cl.[3] D04B *23/00*
U.S. Cl. 66—207 5 Claims



1. A guidebar shogging linkage arrangement for warp knitting machines having a guide bar, a needle bar with a plurality of equally spaced needles disposed thereon, a shogging guide apparatus for shogging said guidebar in predetermined increments parallel to said needle bar, and a power driving source operatively coupled thereto, comprising in combination:

(a) a pair of guide means, each of said guide means having means for providing a predetermined incremental distance in a longitudinal direction;

(b) a pair of slider bars, each of said slider bars being mounted in the longitudinal direction and operatively coupled to one of said pair of guide means, the position of each said slider bar in longitudinal direction being determined by said guide means being set to a particular distance according to a predetermined program,

(c) shogging lever means operatively coupled to said guidebar for moving said guidebar in a direction parallel to said needle bar,

(d) first and second elongated lever means, one end of said first lever being pivotably connected to one of said slider bars, one end of said second lever means being pivotably connected to the other of said slider bars,

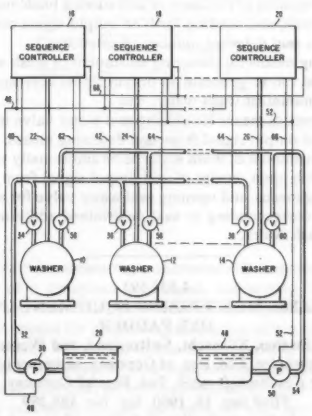
(e) keying element means positioned in intimate contact with said shogging lever means having a pivot hinge means adapted to pivotably retain the other ends of said first and second lever means about a common axis, said shogging lever means being driven by said power driving source with its position alternately related to the longitudinal position of said first and second slider bar.

4,335,591

MULTIPLE WASHER LAUNDRY SYSTEM WITH COMMON FUNCTION CONTROL

Robert A. Gillespie, Bridgeport, Conn., assignor to Brent Chemicals Corporation, Stamford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,754
Int. Cl.[3] D06F *31/00, 33/02*
U.S. Cl. 68—12 R 20 Claims



1. A control and operating system for a laundry having a plurality of washers and having at least one function which is common to more than one of said washers and is to be performed by only one washer at a time,

comprising a separate sequence controller connected to each washer for controlling the sequential operations of that washer,

a common intercommunication channel means coupled to all of said controllers,

said controllers being operable to intercommunicate by request and response signals carried through said common channel and each of said controllers including control means enabling said washers to operate concurrently on the basis of those signals to prevent more than one washer

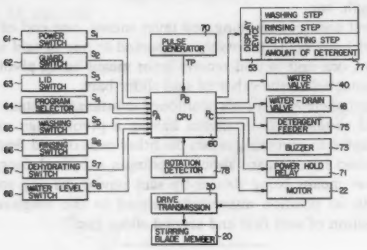
at a time from performing a common function that is to be performed by only one washer at a time.

4,335,592

AUTOMATIC WASHER

Fumio Torita, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 25, 1980, Ser. No. 210,532
Claims priority, application Japan, Nov. 26, 1979, 54-153317
Int. Cl.³ D06F *33/02, 39/08*
U.S. Cl. 68—12 R **10 Claims**



1. An automatic washer comprising:

a tub having a bottom wall for holding at least wash water;

water valve means for controlling an amount of wash water to be supplied to said tub;

a stirring blade member rotatably provided inside of said bottom wall of said tub;

drive means for rotating said stirring blade member;

measuring means connected to said drive means for detecting a number of rotations of said stirring blade member per unit time, and sending forth an output signal corresponding to said detected number of rotations;

detecting means for detecting an amount of wash water held in said tub to generate an output signal corresponding to the amount of wash water; and

valve control means for closing said water valve in response to said output signal from said detecting means, determining an amount of wash water to be additionally supplied to said tub upon receipt of said output signal from said measuring means, and opening said water valve for a length of time corresponding to said determined additional supply of wash water.

4,335,593

CHAINLESS MERCERIZING EQUIPMENT USING A DYE PADDER

Christian Strahm, Küsnacht, Switzerland, and Werner Strudel, Friedrichshafen, Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

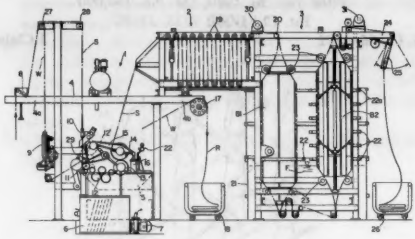
Filed Sep. 18, 1980, Ser. No. 188,289
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1979, 2940867
Int. Cl.³ D06B *7/08, 7/10*
U.S. Cl. 68—13 R **11 Claims**

1. In chainless mercerizing equipment for the selective processing of flat textiles and hose ware using a mercerizing dye padder provided with rollers, the material being guided over mercerizing rollers through a bath of a treatment liquid and the excess treatment liquid being forced out of the material by a subsequent pair of rollers, and the material then being washed, the improvement comprising

(a) selective feed path means preceding the dye padder from a common site, said paths including different expander means for flat textiles and hose ware respectively,

(b) a clear space for moving in and out a batching or cuttling means for the flat textiles and means for guiding the material from the dye padder to the batching or cuttling means, and

(c) an air passage means spanning the clear space and acting as a development path for the hose ware, followed by a



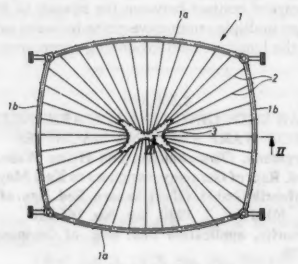
treatment means provided with at least one circular expander and bounding the clear space, and a subsequent cuttling means, and means for guiding said hose ware from the dye padder to said cuttling means.

4,335,594

APPARATUS FOR HIDE STRETCHING

Antti K. Viljanmaa, Torisevantie 4 A 8, 34800 Virrat, Finland

Filed Jan. 18, 1980, Ser. No. 113,706
Claims priority, application Finland, Jan. 18, 1979, 790156
Int. Cl.³ C14B *1/26;* D06C *3/08*
U.S. Cl. 69—19.3 **10 Claims**



1. In a hide stretching apparatus, in particular for the tentering of wet hides for drying, of the type comprising in combination:

a stretching frame having peripherally attached thereto and radially extending inwardly therefrom a plurality of guides, each of said guides having a first end affixed to said frame and a second end affixed to a center piece located centrally in said frame;

a like plurality of clamps, individual ones of said clamps being slidably attached to corresponding ones of said guides so as to be movable in an inward direction and an outward direction, respectively toward said second end and said first end of a corresponding one of said guides, each of said clamps being provided with a pair of jaws operable between an open position and a closed position, said jaws being so disposed and dimensioned as to be capable of grasping an edge of a hide when in said closed position and releasing said edge when in said open position; and

a hide changing table provided with a clamp displacement member for each of said clamps, said clamp displacement member being dimensioned and disposed so as to be capable of translating an individual one of said clamps along said corresponding one of said guides;

the improvement comprising

a plurality of support strips affixed to said hide changing table, said support strips being dimensioned and disposed to fit adjacent said guides when said stretching frame is aligned on said hide changing table; and

a vertically movable press means provided with press members disposed in confronting relationship to said support strips, said press members being so dimensioned and disposed as to grasp a hide when said press means is in its lowermost position and release said hide when said press means is in its upermost.

4,335,595

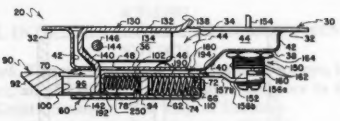
PADDLE LOCK WITH HANDLE DISCONNECT

Jye P. Swan, Brunswick Hills; John V. Pastva, Jr., Parma Hts., and Donald J. Dignan, South Euclid, all of Ohio, assignors to The Eastern Company, Cleveland, Ohio

Filed Dec. 28, 1979, Ser. No. 108,016

Int. Cl.³ E05B *55/06;* E05C *1/12*

U.S. Cl. 70—149 **39 Claims**



1. A door lock, comprising:

(a) a body structure defining an elongate bolt-mounting passage therein;

(b) a bolt structure positioned at least partly in the passage for movement between latching and unlatching positions, the bolt structure having a connecting formation connected thereto for movement along a first path of travel within the passage in response to movement of the bolt structure between its latching and unlatching positions;

(c) a handle structure connected to the body structure for movement between normal and operating positions, the handle structure having an operating formation connected thereto for movement along a second path of travel within the passage in response to movement of the handle structure between its normal and operating positions;

(d) key control means connected to a selected one of the structures and having a locking member which is movable relative to the selected structure between locked and unlocked positions, the key control means being operable to selectively retain the locking member in its locked and unlocked positions;

(e) disconnect means interposed between the operating formation and the connecting formation for selectively drivingly connecting and disconnecting the operating and connecting formations to thereby selectively drivingly connect and disconnect the handle and bolt structures, the disconnect means including a disconnect member housed at least partly within the passage, and mounting means supporting:

(i) only a part of the disconnect member for movement within the passage along a third path of travel between connecting and disconnecting positions in response to movement of the locking member between its locked and unlocked positions; and,

(ii) the entire disconnect member for movement along a fourth path of travel paralleling the length of the elongate passage in response to movement of the operating formation along the second path of travel;

(f) the disconnect means being operable:

(i) when the part of the disconnect member is in its connecting position, to drivingly connect the handle and bolt structures such that, when the handle structure is moved to its operating position, the bolt structure is caused to move to its unlatching position; and,

(ii) when the part of the disconnect member is in its disconnecting position, to provide no driving connection between the handle and bolt structures, whereby the handle structure may be moved freely between its normal and operating positions and the disconnect member may be moved freely along the fourth path of travel without causing corresponding movement of the bolt structure; and,

(g) the mounting means being operable to translatably mount the entire disconnect member for linear movement along the fourth path of travel longitudinally with respect to the passage, whereby the fourth path of travel is caused to take the form of a linear path, paralleling the length of the elongate passage, and the mounting means being operable to confine the third path of travel to directions extending substantially laterally of the linear fourth path of travel.

4,335,596

DEVICE FOR MEASURING THE OPERATION OF A TIMEPIECE MOVEMENT

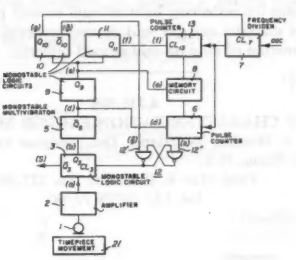
Yvan Greiner, La Chaux-de-Fonds, Switzerland, assignor to Portescap, La Chaux-de-Fonds, Switzerland

Filed Oct. 30, 1979, Ser. No. 89,355

Claims priority, application Switzerland, Oct. 30, 1978, 11170/78

Int. Cl.³ G04B *17/00;* G04D *5/00*

U.S. Cl. 73—6 **3 Claims**



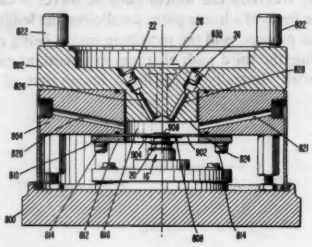
1. A device for measuring a characteristic magnitude of the operation of a timepiece movement, comprising means for detecting the vibrations produced by the operation of said movement, means for generating measuring pulses in response to said detected vibrations, means for preventing the generation of said measuring pulses during a blocking period which is a part of each time interval between two consecutive groups of vibrations produced by the operation of said movement in order to avoid the generation of said measuring pulses in response to undesired interfering noise vibrations, means for applying said measuring pulses to means for comparing the repetition frequency of said measuring pulses with the constant repetition frequency of clock pulses so as to produce an electric signal which is a measure of the said characteristic magnitude, and meter means adapted to receive said electric signal, said means for preventing the generation of said measuring pulses in response to said undesired interfering noise vibrations being adapted to start each blocking period immediately after the end of each said measuring pulse and to provide blocking periods which are each equal to the duration of the penultimate time interval between said measuring pulses preceding said blocking period, less a predetermined constant duration time window for said measuring pulse.

4,335,597

DEW POINT HYGROMETER WITH TWO COOLED REFLECTIVE SURFACES

Stanley B. Hayes, Jr., Norfolk, and Robert T. O'Connor, Hollis-ton, both of Mass., assignors to EG & G, Inc., Wellesley, Mass.

Filed Mar. 28, 1980, Ser. No. 134,827
Int. Cl.³ G01N *25/68*
U.S. Cl. 73—17 A 8 Claims



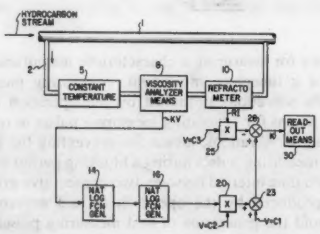
1. A dew point hygrometer comprising:
a. a thermally variable surface;
b. first thermally conductive material having a first portion in contact with said surface and having a second portion extending beyond said surface;
c. thermally insulative material covering at least a section of said first portion of said first material;
d. second thermally conductive material covering at least a part of said section of said first portion of said first material; and
e. means for reflecting light off said second portion of said first material and off said second material to detect the formation of dew on said second material.

4,335,598

UOP CHARACTERIZATION FACTOR MONITOR

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,665
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—53 5 Claims



1. A UOP characterization factor monitor comprising means for sampling a hydrocarbon stream, means for changing the temperature of the sample hydrocarbon stream to a predetermined temperature, analyzer means receiving the sample hydrocarbon stream for providing a signal KV corresponding to the kinematic viscosity of the hydrocarbon stream at the predetermined temperature, refractometer means receiving the sample hydrocarbon stream for providing a signal RI corresponding to the refractive index of the hydrocarbon stream at the predetermined temperature, and output means connected to the analyzer means and to the refractometer means and receiving direct current voltages corresponding to constants C1, C2 and C3 for providing an output signal K corresponding to the UOP characterization factor in accordance with signals KV and RI, the received voltages, and the following equation

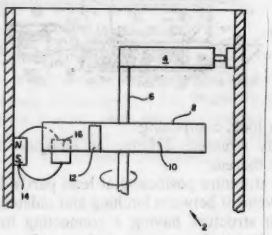
$$K = C1 + C2\ln\ln(KV) - C3(RI).$$

4,335,599

DEVICE FOR GENERATING A REFERENCE SIGNAL CORRESPONDING TO A GIVEN OPERATIONAL STATE OF A FOUR-CYCLE INTERNAL COMBUSTION ENGINE

Karl-Heinz Köhler, Ingolstadt, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,601
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927538
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 4 Claims



1. A device for generating a reference signal corresponding to a predetermined state in the operation of a four-cycle internal combustion engine and more particularly an internal combustion engine with an odd number of cylinders having an impulse generator with a post-connected triggering threshold which in a given position of the crankshaft emits an indicator signal used for the production of the reference signal, said device comprising a signal generator which emits an H signal during a first angle range of a shaft rotating at one half the speed of the crankshaft and a zero signal during a second angle range whereby the positions of the first angle range and of the second angle range are so selected that the indicator signals (CkS) alternately appear during an H and during a zero signal, and an AND gate connected to said signal generator and at the output of which the reference signal appears when the input coincidentally receives both an indicator signal and an H signal.

4,335,600

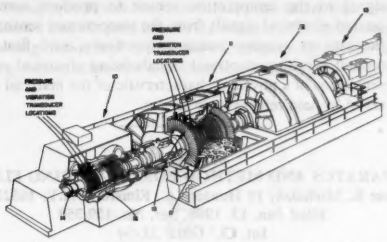
DETECTING INTERNAL ABNORMALITIES IN TURBINES

Peter T. Wu, Clifton Park, and Stephen E. Grabkowski, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1980, Ser. No. 206,653
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 11 Claims

1. The method of monitoring a running turbine, which has a stationary shell enclosing a multi-bladed rotor and generates rotary mechanical power from the energy in a stream of fluid, comprising the steps of:
sensing the dynamic pressure of the fluid within the turbine shell and producing a corresponding pressure signal;
sensing the vibration of the turbine shell and producing a corresponding vibration signal; and

processing said pressure and vibration signals; both of which are electrical signals, to detect undesirable internal me-



chanical defects and changes in the fluid flow paths that lead to turbine malfunction.

4,335,601

FUEL INJECTION NOZZLE WITH MOVEMENT SWITCH

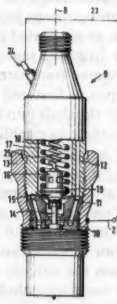
Rainer Buck, Tamm; Odon Kopse, and Nestor R. Amaya, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,223

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939274

Int. Cl.³ G01M *19/00*

U.S. Cl. 73—119 A **5 Claims**



1. A fuel injection nozzle holder for internal combustion engines for ascertaining the onset of fuel injection comprising a nozzle needle,

an electrical switch arranged to be actuated by said nozzle needle during an opening stroke of said nozzle needle,

said electrical switch including plural contacts

whereby movement of at least one of said contacts is limited by its inertia of mass.

4,335,602

METHOD AND APPARATUS FOR PROTECTING SUBSURFACE ELECTRONIC ASSEMBLIES FROM SHOCK AND VIBRATION DAMAGE

Arnold M. Walkow, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 161,826

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—152 **5 Claims**

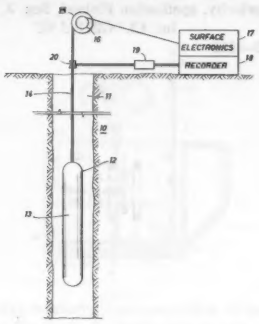
1. Well logging apparatus for investigating earth formations traversed by a borehole, comprising:

an elongated tubular housing adapted to traverse said borehole;

an elongated instrument chassis having instrumentation circuitry mounted thereon and adapted for positioning within said tubular housing;

a pair of freely rotating ball rollers angularly disposed and mounted on said chassis; and

at least one spring loaded ball roller assembly said assembly



comprised of a housing having an internal cavity therein, a plunger member slidably retained within said cavity and a plurality of disk springs disposed within said cavity for exerting an outward force upon said plunger, said plunger being compressed when said chassis is positioned within said housing for restraining said chassis within said housing.

4,335,603

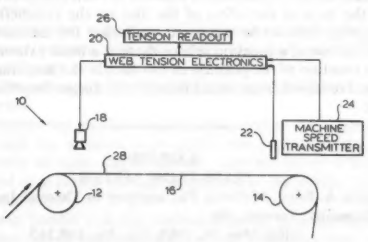
SONIC MEASUREMENT OF WEB TENSION

Stephen A. Locke, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 13, 1980, Ser. No. 177,722

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—159 **10 Claims**



1. A method of measuring web tension of a moving paper web, comprising the steps of:

moving the paper web along a path and measuring the web speed;

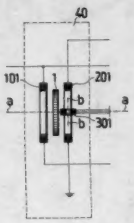
applying ultrasonic vibrations to the moving paper web at a first location along the path to produce transverse waves on the paper web, including generating an electrical signal at an ultrasonic frequency and applying the electrical signal to an ultrasonic transducer at the first location;

sensing the interval between the application of the ultrasonic vibrations at the first location and the sensing of the transverse waves at the second location to determine the wave propagation velocity, including testing whether the reception time measured from the beginning of ultrasonic application falls within an interval between a minimum time and a maximum time, rejecting all measurements not within the time interval, algebraically adding the web travel time between the first and second locations as a velocity correction representing web tension.

4,335,604
METHOD AND APPARATUS FOR THE IDENTIFICATION OF COINS OR EQUIVALENT

Timo J. Ekman, Vantaa, Finland, assignor to Cointest Oy, Helsinki, Finland

Filed Sep. 3, 1980, Ser. No. 183,810
Claims priority, application Finland, Sep. 3, 1979, 792729
Int. Cl.[3] G07F *3/02*
U.S. Cl. 73—163 8 Claims

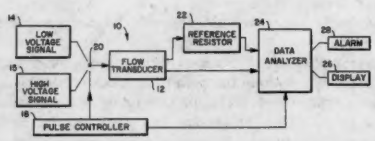


1. A method for testing and identifying electrically conductive discs such as coins, according to which method
the effect of each disc on a magnetic field generated, e.g., by means of coils is measured,
the measurement result obtained in this way is compared with a reference value,
the disc is accepted if the measured value is close enough to the reference value, and
the reference value is determined on the basis of the effect produced by a preselected reference disc upon a magnetic field preferably of the same magnitude as the magnetic field to be measured,
wherein the magnitude of the magnetic field is measured in two directions at least substantially perpendicular to each other such that, by means of an additional coil placed at least substantially in the symmetry plane of the magnetic field to be measured, the measurement moment of each disc is determined on the basis of the effect of the disc on the symmetry of the magnetic field to be measured, such that the measurement is carried out at a location where there is a local extreme value, as a function of the position of the disc, in the amplitude of the signal received from the additional coil due to the effect of the disc.

4,335,605
MASS FLOW METER

Branin A. Boyd, Malvern, Pa., assignor to Thermal Instrument Company, Trevose, Pa.

Filed May 14, 1980, Ser. No. 149,167
Int. Cl.[3] G01F *1/68*
U.S. Cl. 73—204 30 Claims



1. In an apparatus for measuring a physical characteristic of a material, the combination comprising:
a temperature sensor having an electrically resistive component for measuring a physical characteristic of the material;
current sensing means in circuit with the resistive component of the temperature sensor for sensing current and producing an electrical signal representative thereof; and
electrical means for first applying a first electrical signal to the temperature sensor to produce resulting first electrical signals from the temperature sensor and the current sensing means respectively, then applying in rapid succession a second electrical signal different from said first electrical signal to the temperature sensor to produce resulting second electrical signals from the temperature sensor and the current sensing means respectively, said first and second resulting electrical signals being electrical representations of a physical characteristic of the material measured by said temperature sensor.

4,335,606
APPARATUS AND METHOD FOR MEASURING FLUID

Janusz K. Michalak, 10 Hunter La., Elmsford, N.Y. 10523

Filed Jun. 13, 1980, Ser. No. 159,358
Int. Cl.[3] G01F *23/04*
U.S. Cl. 73—298 10 Claims

1. An apparatus for measuring the level of a fluid from a remote location, comprising means providing a reference point below the fluid surface, an elongated hollow shaft providing a permanent passageway from the remote location to the reference point, and an elongated transparent tubular member having both of its ends open, a first end of the tubular member being insertable through the shaft into the fluid to the reference point below the fluid surface to establish a column of the fluid in the tubular member having a height generally equal to the level of the fluid above the reference point, the tubular member including a relatively stiff tether threaded therethrough and extending beyond the ends thereof, a plug connected to the tether in proximity to the first end of the tubular member for closing the first end prior to withdrawing the tubular member from the shaft to contain the column of the fluid therein, the first end of the tubular member including an outwardly flared section of pliable material for receiving the plug, the plug being tapered for entering the flared section of the first end of the tubular member, the plug including a sleeve of pliable material for frictionally engaging the flared section of pliable material of the first end to lock the plug in the first end, and means connected to the tether in proximity to a second end of the tubular member for applying a force sufficient to seat the plug in a locked position in the first end.

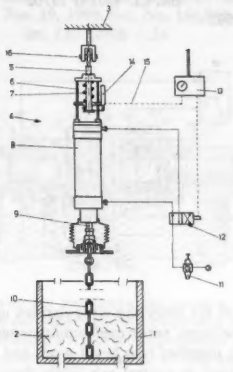
4,335,607
APPARATUS FOR MEASURING THE FILLING LEVEL OF CONTAINERS

Arnold Junghänel, Alfeld, Fed. Rep. of Germany, assignor to Alfelder Eisenwerke Carl Heise Kom. Ges., Alfeld, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 114,888
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903906
Int. Cl.[3] G01F *23/20*
U.S. Cl. 73—290 R 8 Claims

1. Apparatus for measuring the filling level of silos and analogous containers having an upper opening and a bottom wall, comprising a measuring chain having a length at least equal to the distance between the opening and the bottom wall;

means mounting said chain to depend under gravitational force from above into a container and to extend to said bottom wall, said means being controlably extensible and retractable and thus being operative to raise and lower the chain relative to the container; and a measuring device connected in series with said mounting means and said chain, said measuring device having spring means extensible and contractable in a path which is in



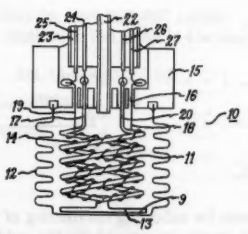
series with said chain, and mounting means, and an indicator movable parallel to said path, the weight of the chain and said mounting means acting continuously on said spring means so that said spring means is always under load to increase the operating life of said spring means by preventing repeated loading and fully unloading of said spring means, and thereby reducing fatigue of said spring means.

4,335,608

SUBMERSIBLE PRESSURE TRANSDUCER DEVICE

Russell J. Wood, Bailey Rd., Lanesboro, Mass. 01201, and Ivan J. Garshelis, 500 Pittsfield Rd., Lenox, Mass. 01240

Filed Jun. 23, 1980, Ser. No. 161,756
Int. Cl.³ G01F *23/18*
U.S. Cl. 73—301 **19 Claims**



1. A pressure transducer for determining the level of liquids comprising:

a sensing element responsive to variations in hydro-static pressure:

air vent means for providing atmospheric pressure to one side of said sensing element;

a water-tight housing for containing said sensing element and for receiving said air vent means, said housing being at atmospheric pressure when submerged below a liquid; and

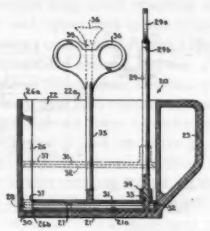
a plate between a portion of said housing and said sensing element for compensating for the differential and thermal expansion between said sensing element and said housing.

4,335,609

MEASURING CUP

Carol A. Saulsbury, 700 NE. 80th Ter., Kansas City, Mo. 64118

Filed Oct. 27, 1980, Ser. No. 201,090
Int. Cl.³ G01F *19/00*
U.S. Cl. 73—426 **18 Claims**



1. A self-clearing measuring cup comprising, in combination:

a cup having a flat, normally horizontal, bottom wall and an upright, normally vertical side wall continuously connected to said bottom wall and its lower edge,

an insert base for the cup having a flat, normally horizontal bottom wall of slightly lesser outer diameter than the internal diameter of the cup side wall and congruent in shape to the cup interior bottom wall, whereby to readily fit down within said cup and rest on the bottom wall and be movable up and down within said cup,

said base having upper and lower sides thereto,

an elongate, normally vertical, base handle connected at its lower end to the upper side of said insert base and extending upwardly at right angles thereto,

said base handle of a height at least equal to the interior depth of the cup,

a flat, normally horizontal compacting top member slidably engageable with the said base handle by an opening therein,

said top member congruent in form to the shape of the cup interior bottom wall and insert base and substantially equal in size to the latter,

said compacting top member having upper and lower sides thereto,

an elongate top member handle connected to the upper side of said top member at its lower end and extending upwardly at right angles thereto, said handle of a height equal to at least a substantial fraction of the interior depth of said cup,

the base handle and the compacting top member handle connected to different areas of the respective base and member so that the compacting top member may be reciprocated within the cup on the base handle.

4,335,610

MULTI-SAMPLE SURFACE AREA MEASUREMENT

Richard L. Scott, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 10, 1980, Ser. No. 128,981
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—432 PS **17 Claims**

1. An apparatus for measuring the amount of a fluid adsorbed by each of a plurality of samples comprising

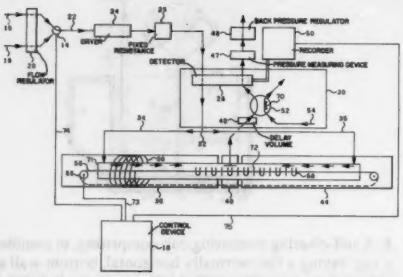
(a) an adsorption zone provided with means for exposing the plurality of samples to said fluid,

(b) a desorption zone provided with means for causing the release of at least some of the adsorbed fluid from one of said sample present in said desorption zone,

(c) a detector operatively connected to said desorption zone and capable of detecting the fluid released from said sample and generating a signal representative of the quantity of said released fluid,

(d) transporting means built and operatively associated with said adsorption zone and said desorption zone to allow the transportation of the samples from said adsorption zone to said desorption zone,

(e) housing means enclosing said adsorption zone and said desorption zone and separating both from uncontrolled contact with the surrounding atmosphere,



(f) connecting means between said adsorption zone and said desorption zone enabling the transporting of said samples from said adsorption zone to said desorption zone, isolated from uncontrolled connection with the atmosphere, and providing for sufficient thermal insulation between said adsorption zone and said desorption zone.

4,335,611

ACCELEROMETER

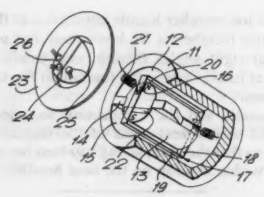
Robert S. Bennett, Beaconsfield, and William E. Griffiths, Middleton, both of England, assignors to Ferranti Limited, Cheadle, England

Filed May 30, 1980, Ser. No. 154,859

Claims priority, application United Kingdom, Jun. 1, 1979, 7919226

Int. Cl.³ G01P *15/13*

U.S. Cl. 73—517 B **18 Claims**



1. A force balance accelerometer comprising core means for producing a magnetic field, an electric coil assembly forming at least a part of an inertial mass, pivotally mounted in the field for rotation substantially perpendicular to the field about an axis also perpendicular to the field, a source of radiation for reflection from said core means and interrupted by said coil assembly, and electric switching means responsive to reflected radiation, arranged to be in a first state when the angular position of the coil is to one side of a switching position and in a second state when the coil is to the other side, said switching means being operable in the first state to cause a first substantially constant current to flow in the coil in a sense to rotate the coil in a direction to cause the switching means to enter the second state and operable in the second state to cause a second substantially constant current to flow in the coil in such a sense as to rotate the coil in a direction to cause the switching means to enter the first state.

4,335,612

METHOD OF DETECTING IRREGULARITIES ON BEVEL GEARS

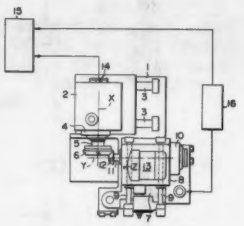
Masahiko Yasugi, Okazaki; Shigeru Takahashi, and Toshio Hashimoto, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 2, 1980, Ser. No. 193,140

Claims priority, application Japan, Nov. 22, 1979, 54-151793

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—593 **7 Claims**



1. A method for detecting irregularities upon bevel gears, comprising the steps, performed simultaneously, of:

(a) meshing together two bevel gears and rotating each of them around its central axis while they remain in mesh, transmitting power from one of them to the other;

(b) further moving the rotating bevel gears relative to one another so that the meshing area between their teeth moves on the tooth surface of at least one of them; and

(c) detecting the occurrence of vibration with a vibration detector.

4,335,613

APPARATUS FOR INDICATING THE FREEZING OF THE SURFACE OF AN ASPHALT ROAD, PAVED RUNWAY, OR THE LIKE

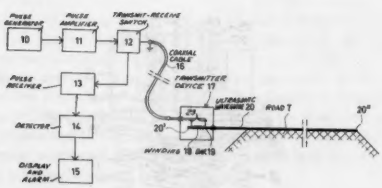
Mauri Luukkala, Espoo, Finland, assignor to Vaisala Oy, Finland

Filed Oct. 6, 1980, Ser. No. 193,915

Claims priority, application Finland, Oct. 10, 1979, 793148

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—599 **9 Claims**



1. Apparatus for indicating the freezing of the surface of an asphalt road, paved runway, or the like, said apparatus comprising

a detecting transmitter device installed in operative proximity with a surface to be observed, said detecting transmitter device including an ultrasonic waveguide installed on the surface to be observed; and

electronic equipment electrically connected to the ultrasonic waveguide for transmitting ultrasonic waves to said ultrasonic waveguide, said ultrasonic waves proceeding in said waveguide, and receiving said ultrasonic waves from said waveguide, the degree of attenuation of said ultrasonic waves in said waveguide depending upon the difference in viscosity and other mechanical properties of water and ice, whereby said detecting transmitter device and said elec-

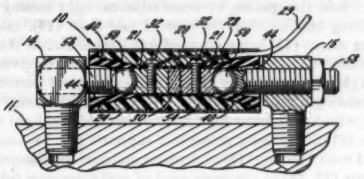
tronic equipment detect freezing of said surface by attenuation of said ultrasonic waves in said waveguide.

4,335,614

WATERPROOF STRAIN SENSING DEVICE

Frank R. Dybel; William F. Dybel, both of Olympia Fields, and Kenneth MacDonald, Deerfield, all of Ill., assignors to International Measurement & Control Company, Frankfort, Ill.

Filed Jun. 19, 1980, Ser. No. 160,944
Int. Cl.³ G01B *7/16*
U.S. Cl. 73—774 **15 Claims**



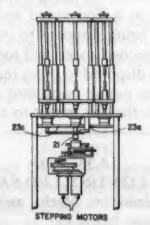
1. A sensing device for measuring deformation experienced by a machine force carrying member comprising a transducer; said transducer including a strain sensing element and a pair of output terminals electrically coupled to said strain sensing element, an electrical cable; means connecting an end of said cable to said output terminals; means supporting said transducer on said force carrying member so as to transmit forces incurred by said member to said sensing element; water and contaminant resistant means for sealing said sensing element, output terminals, and cable connecting means from water and other contaminants to which said transducer is exposed on said machine member; said sealing means including an outer sheath within said sensing element and terminals are housed; and flexible bushing means located in opposed ends of said sheath for sealing the interior thereof while permitting the transmission of forces from said support means to said sensing element.

4,335,615

EQUIPMENT FOR TESTING MATERIALS FOR STRESS CORROSION CRACKING

Horst Kalfa, Frankfurt; Bruno Schubert, Langen; Peter Brunmayer, Usingen, and Siegfried Gellermann, Mainz, all of Fed. Rep. of Germany, assignors to DECHEMA, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,983
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 7917161[U]
Int. Cl.³ G01N *19/08*
U.S. Cl. 73—799 **7 Claims**



1. Apparatus for testing materials for stress corrosion cracking comprising:

(a) at least two tensioning units, each unit including a base plate (3), two guide columns (2) mounted on said plate, an upper stationary cross-beam (1) mounted on said columns, a lower movable cross-beam (4) vertically slidable on said columns, means for clamping said lower cross-beam to said columns, sample holding means, and means for moving said lower cross-beam, said lower cross-beam comprising a cross plate, four guide nuts (7) and two tubes (5), said guide nuts being mounted on the ends of the tubes which ride on said columns and carry said cross-plate, said clamping means comprising a slotted guide nut (6) operatively associated and carried by one of said tubes, said holding means comprising quick coupling means (9),(10) connected with said upper and lower cross-beams, said cross plate carrying a connecting flange 13 secured to said cross-plate by detachable screws; and

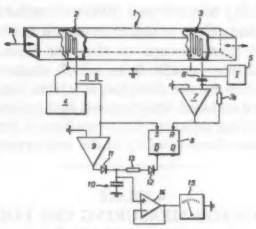
(b) a drive power block mounted on said base plate comprising at least one drive gear (23) operatively associated with said means for moving said lower cross-beam and a motor power unit driving said at least one drive gear, said motor power unit comprising two stepping motors (41,42), a sun gear (43) driven by one stepping motor, an annular crown gear (45) driven by the other stepping motor, at least one planetary gear (44) in driving engagement with said gun gear and said crown gear, an arm (48) carrying said planetary gear and a drive shaft (49) carrying said arm, said drive shaft being operatively associated with said at least one drive gear.

4,335,616

PROCESS AND DEVICE FOR MEASURING THE FLOW RATE OF A FLUID

Ambro Oliva, Deuil la Barre, and Luc Joly, Soisy sur Montmorency, both of France

Filed Jul. 24, 1980, Ser. No. 171,794
Claims priority, application France, Jul. 26, 1979, 79 19337
Int. Cl.³ G01F *1/68, 1/70*
U.S. Cl. 73—861.05 **3 Claims**



1. Flowmeter for a fluid, comprising a length of pipeline through which the fluid flows, emitting means constituted by an electrical resistance in the form of a grid extending in a transverse plane of the length of pipeline for producing, in response to an input pulse, a disturbance to the state of the fluid positioned in the pipeline at a first point in its length, a detector constituted by an electrical resistance having a temperature coefficient and supplied with a constant current, said detector being sensitive to the disturbance in the state of the fluid for emitting an output signal, the detector being positioned in the pipeline at a second point in its length spaced downstream of said first point in the direction of flow by a predetermined distance, a pulse generator for periodically applying an input pulse to said emitting means, and means connected to said pulse generator and to said detector for measuring the time between an input pulse and the corresponding output signal, said means for measuring the time comprising an amplifier having an input connected to the terminals of the resistance having a temperature coefficient by way of a first capacitor, a flip-flop with an enabling input connected to the pulse generator and a disabling input connected to the output of the amplifier, and a second capacitor which is charged in response to the pulses from the generator and is discharged across a resistance by the enabled flip-flop.

4,335,617
FLOWMETER

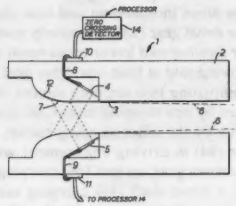
Michael P. Ashmore, Enysham; Thien V. How, Headington, and Peter Rolfe, Boars Hill, all of England, assignors to Vickers Limited, London, England

Filed Feb. 26, 1980, Ser. No. 124,822

Claims priority, application United Kingdom, Feb. 27, 1979, 7906900

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.25 **4 Claims**



1. A flowmeter, suitable for use in measuring pulsatile fluid flow, comprising a transducer assembly and a processor, said transducer assembly comprising (A) a body through which extends a passage for carrying a fluid whose flow-velocity is to be measured, the body defining an inlet mouth for the passage which is so shaped as to provide, in use, a region in the mouth in which the velocity profile across the width of the mouth is substantially uniform, (B) an ultrasonic piezo-electric source arranged to emit wave energy along a path across the axis of the said passage, (C) an ultrasonic piezo-electric detector arranged to detect wave energy received as a result of the emitted energy being scattered within the fluid flow, the source and the detector being bonded on a different inclined surface machined in said body close to said inlet mouth and being set back from the fluid flow passage so that the insonated volume within the said inlet mouth, from which scattered ultrasonic energy is received by the detector, is within the near field of both said source and said detector, and said processor comprising a zero-crossing detector for providing a direct measurement of the mean flow-velocity in the said region.

4,335,618
APPARATUS FOR MEASURING THE VOLUME OF FLOWING FLUIDS

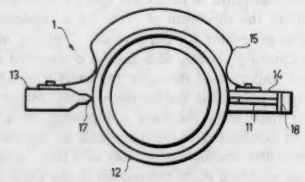
György Bucsky, Szabadsag; Zoltan Kiss, Veszprem; Ivan Matyas, Budapest; Jozsef Pazmany, Balatonfüred; Gyula Selyem, and Lajos Tatrai, both of Veszprém, all of Hungary, assignors to Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezet, Veszprem, Hungary

Filed Mar. 12, 1980, Ser. No. 129,413

Claims priority, application Hungary, Mar. 19, 1979, MA 3122

Int. Cl.³ G01F *1/24*

U.S. Cl. 73—861.56 **7 Claims**



1. Apparatus for measuring the volume rate of flow of flowing fluids, comprising a rotameter inserted in the flowing path of said fluid, said rotameter comprises a rotameter tube with a light transparent wall, and a float of non-transparent material located in said rotameter tube, the position of said float in said tube corresponding to the volume rate of flow of said flowing fluid, in which the improvement lies in that a linear light source (**10**) being coupled to the outer wall of said rotameter tube (**12**) the light of which illuminating a section of said rotameter tube (**12**) being longer than the full size of said float (**19**), a plurality of light sensing means (**11**) being arranged at the outer wall of said rotameter tube (**12**) in a diametrically opposing position compared to that of said light source (**10**) with main light sensing direction being normal to the axis of said rotameter tube (**12**), said light sensing means (**11**) being arranged spacedly side by side, the spacing between adjacent light sensing means (**11**) being smaller than the size of said float (**19**), said light sensing means (**11**) being coupled to a logical circuit (**5**) which in response to the discrete signal combinations received from said light sensing means (**11**) provides a signal combination representing a discrete position of said float (**19**) in said rotameter, in which said linear light source (**10**) and said light sensing means (**11**) comprising respective supports (**13, 14**) inter-connected with a stirrup (**15**) of resilient material for clamping said supports (**13, 14**) to the outer wall of said rotameter tube (**12**).

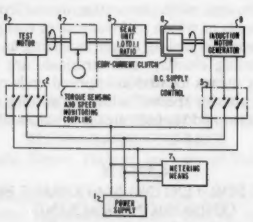
4,335,619
MOTOR LOAD TEST APPARATUS

Donald A. Wetzel, Upper St. Clair, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1980, Ser. No. 127,272

Int. Cl.³ G01L *3/22*

U.S. Cl. 73—862.17 **5 Claims**



1. A motor test apparatus comprising:

a first coupling means for connecting a test motor thereto; a second coupling means connected to the first coupling means; a controllable slip means connected to the second coupling means; an induction generator connected to the controllable slip means; starting means for supplying an electrical power system to the test motor and induction generator; the test motor being disposed to drive the first coupling means at a first speed and torque; the second coupling means being disposed to increase the first speed and torque to a second speed and torque; the controllable slip means being disposed to drive the induction generator until it generates power back into the electrical power system and loads the test motor to a full load speed.

4,335,620
TEMPERATURE CONTROLLED SAMPLE CARRIER

Wade J. Adams, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 16, 1980, Ser. No. 169,327

Int. Cl.³ G01N *35/04*

U.S. Cl. 73—863.11 **14 Claims**

1. A temperature controlled sample carrier apparatus, of the type having:

a fixed base;

a rotating sample rack having a circumferential array of upwardly facing sample holes adjacent the periphery

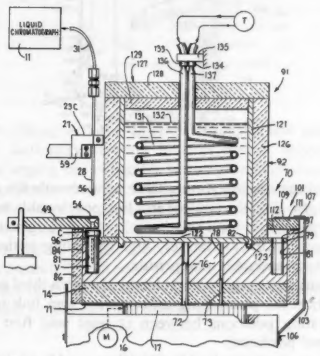
thereof for receiving sample vials and orbiting same sequentially past a sampling station;

means for supporting and rotatably driving said sample rack atop said fixed base;

including the improvement wherein said rack comprises a solid block of heat conductive material and of substantially cylindrical form, the top surface of said block being substantially unbroken except for said sample vial receiving holes adjacent the periphery thereof and the thickness of said block corresponding substantially to the height of said vials such that said block forms a massive heat sink, and including;

an insulative cup having a peripheral wall and bottom wall and snugly receiving said sample block therein for rotation therewith, said insulative cup peripheral wall extending above said sample block;

temperature control means for carrying a controlled temperature fluid, said temperature control means being in heat conductive contact with said block and disposed radially



inboard of said array of sample holes at the central portion of said block, at least a portion of said temperature control means extending above said block;

insulative cover means overlying said temperature control means and the central portion of said block for rotation therewith;

an insulative cover ring and means supporting same fixedly with respect to said base in close spaced relation above the upper end of said insulative cup peripheral wall, said insulative cover ring extending radially inward into close spaced relation with said insulative cover means for permitting rotation of said insulative cup and cover means with respect to said insulative cover ring while minimizing thermal losses from said sample block in the annular space above said sample holes;

means defining a circumferentially narrow opening in said insulative cover ring for access to the upper ends of sequentially presented sample vials rotating past said opening with said sample block.

4,335,621

PIPETTE

Jukka Tervamäki, and Osmo Suovaniemi, both of Helsinki, Finland, assignors to kommandiittiyhtio Finnpipette Osmo A. Suovaniemi, Helsinki, Finland

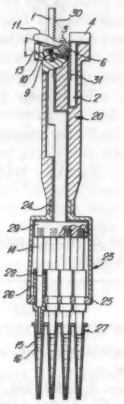
Filed Aug. 25, 1980, Ser. No. 181,176

Claims priority, application Finland, Aug. 31, 1979, 792709

Int. Cl.³ G01N *3/02*

U.S. Cl. 73—863.32 **4 Claims**

1. A pipette comprising a handle portion, whose upper end is provided with a press knob with a shaft and inside which a piston rod is fitted and to the bottom end of the piston rod is connected at least one piston and, for each piston, a cylinder part, which is fastened to the frame construction of the handle portion, and the piston rod and the press knob shaft, which are parallel to each other, are placed at a distance from each other, and their surfaces facing each other are shaped as jointly operative with a movement transfer wheel fitted between them and journalled on the handle portion by means of a shaft, whereby, when the press knob is depressed, by the intermediate of the press knob shaft, of the movement transfer wheel, and of the piston rod, the piston in each cylinder portion can be shifted from the lower position into the upper position so as to suck liquid into the tip vessel connected to each cylinder portion,



characterized in that a freewheel is fitted inside at least one of the movement transfer wheel and an operating means mounted on the shaft of the movement transfer wheel which freewheel is coupled to its shaft in one direction so that, when the shaft is turned back and forth by means of the operating means mounted on the shaft, repeated depressions of the operating means produce shifting of the piston rod stepwise downwards while the pivoting angle of the operating means determines the magnitude of the dose to be removed at a time from at least one tip vessel.

4,335,622

SOIL GAS PROBE

Gerald L. Bartz, Amarillo, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

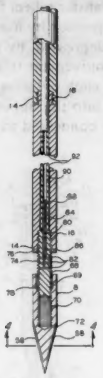
Filed Aug. 22, 1980, Ser. No. 180,254

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—864.74 **17 Claims**

1. A tip for a soil gas probe, said tip having an upper end, a lower end, and a longitudinal axis, with a generally cylindrical surface portion of the tip extending from the upper end of the tip toward the lower end of the tip and a penetrating portion of

the tip converging from the generally cylindrical portion to a point at the lower end of the tip, the penetrating portion of the



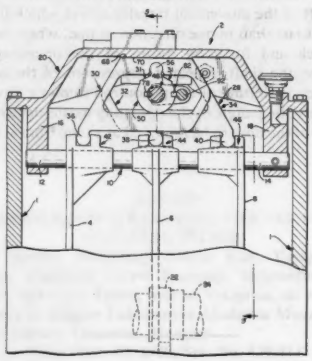
tip having at least one elongated generally longitudinally extending channel in its surface.

4,335,623

TRANSMISSION SHIFT CONTROL MECHANISM

Victor Kronstadt, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Mar. 7, 1980, Ser. No. 128,171
Int. Cl.[3] G05G *5/10, 9/12*
U.S. Cl. 74—477 **18 Claims**



1. An apparatus for selecting a gear ratio for a transmission system comprising:

a. a stationary rail;

b. a plurality of shifter means mounted for longitudinal movement on said rail for effecting a change in gear ratio;

c. a selector shaft mounted for lateral movement along its axis and rotative movement about said axis;

d. a plurality of cams arranged for separate actuation by said selector shaft, a plurality of levers having respective cam surfaces, said cams having respective cam portions for engaging cam surfaces of corresponding ones of said levers;

e. said levers being arranged for separate actuation by corresponding ones of said cams, said levers being aligned with said shifting means for engagement with corresponding ones of said shifter means for longitudinally moving said shifter means; and

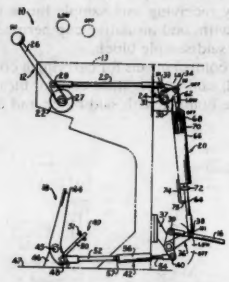
f. said selector shaft including means for selectively engaging said cams and for moving the selected cam to effect movement of the corresponding lever.

4,335,624

GOVERNOR AND DECELERATOR CONTROL LINKAGE

Ronald H. Garman, Pekin, and Gerald H. Welker, Eureka, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 731,472, Oct. 12, 1976, abandoned.
This application Mar. 22, 1979, Ser. No. 22,747
Int. Cl.[3] G05G *1/14, 11/00*
U.S. Cl. 74—482 **9 Claims**



1. A linkage assembly mountable on a console for operating a control arm link, the control arm link positionable between at least a first position for a relatively low operating setting and a second position for a relatively high operating setting;

the linkage assembly comprising:

bell crank means movable at least between a third and fourth position for positioning said control arm link in various operating positions between at least said first and said second positions;

a first actuator including a manually operable portion and an extensible link portion, said first actuator associated with said control arm link by said bell crank means and operably movable to responsively position said bell crank means between at least said third and said fourth positions;

a second actuator including a compressible link and a pedal portion, said second actuator spatially removed from said first actuator and associated with said control arm link by said bell crank means and releasably operative to position said bell crank means so that said control arm link is moved at most from a relatively high operating setting to a relatively low operating setting while the manually operable portion of the first actuator remains undisturbed;

said extensible link portion extendable by motion of said second actuator for resiliently returning the control arm link to a relatively high operating position upon release of said second actuator; and said compressible link for allowing said control arm link to travel in response to said first actuator beyond the relatively low operating setting while the pedal portion remains undisturbed;

said bell crank means interconnecting said extensible link and said compressible link with the control arm link.

4,335,625

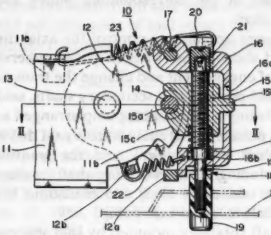
TILTABLE STEERING SHAFT MECHANISM FOR AUTOMOBILES

Masumi Nishikawa, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 20, 1980, Ser. No. 208,578
Claims priority, application Japan, Nov. 26, 1979, 54-153101
Int. Cl.[3] B62D *1/18*
U.S. Cl. 74—493 **3 Claims**

1. A tiltable steering shaft mechanism comprising steering bracket means secured to a stationary part of an automobile, swingable steering bracket means mounted on the stationary

steering bracket means for swinging movement about a first transversely extending horizontal axis, support bracket means mounted on the swingable steering bracket means for swinging movement about a second transversely extending horizontal axis, adjusting bracket means mounted on the support bracket means for movement in a direction substantially perpendicular to the horizontal axis, adjusting means for moving the adjusting bracket means with respect to the support bracket means, releasable engagement means between the stationary steering bracket means and the adjusting bracket means, first spring



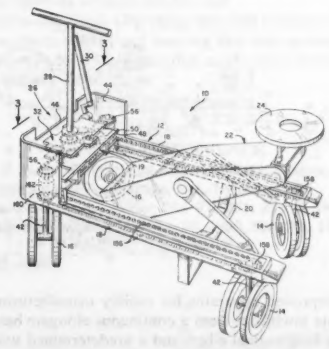
means for urging the adjusting bracket means into engagement with the stationary steering bracket means, second spring means for urging the swingable steering bracket means so that the swingable steering bracket means is swung upwardly about the first axis when the adjusting bracket means is released from the stationary steering bracket means, first steering shaft means carried by said swingable steering bracket means and having one end connected with second steering shaft means of invariable tilting angle through universal joint means having a center substantially on the first horizontal axis.

4,335,626

VARIABLE RATIO ROTARY POSITIONING MECHANISM AND CAMERA DOLLY STEERING MECHANISM EMBODYING SAME

James L. Fisher, 10918 Burbank Blvd., North Hollywood, Calif. 91601

Division of Ser. No. 945,887, Sep. 26, 1978, Pat. No. 4,257,619. This application Dec. 16, 1980, Ser. No. 217,162
Int. Cl.³ B62D *1/00, 7/06;* F16H *21/44*
U.S. Cl. 74—496 **9 Claims**



1. An adjustble ratio rotary positioning mechanism comprising:

a frame,

a rotary drive shaft and a rotary driven shaft on said frame,

an adjustable ratio transmission drivably coupling said shafts for rotation of said driven shaft by said drive shaft with a turning ratio which is the driven shaft rotation angle per unit drive shaft rotation angle,

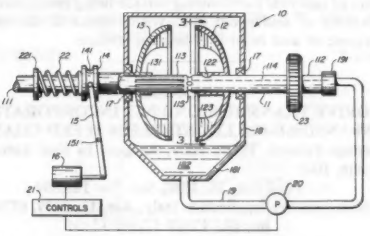
said transmission comprising an endless flexible drive band trained about and in rotary driving relation with said shafts for rotation of said driven shaft by said drive shaft through said drive band, said drive band having first and second runs between said shafts which are laterally adjustable in unison to increase the length of either run and decrease the length of the other run during rotation of said driven shaft by said drive shaft in such a way as to vary the linear velocity of said drive hand about said driven shaft independently of the angular velocity of said drive shaft and thereby said transmission turning ratio, and means for laterally adjusting said runs in unison at different selected rates during rotation of said driven shaft by said drive shaft to provide said transmission with different selected ratios, said transmission run adjusting means comprising a cam rotatable by said drive shaft transmission, run guides engaging said runs between said shafts and mounted on said frame for movement along transverse direction lines of said runs to laterally adjust said runs, and presettable variable ratio motion translating means operatively connecting said cam and guides for effecting movement of said guides along said direction lines by said cam during cam rotation by said drive shaft with a presettable variable translation ratio equal to the travel of said guides along said direction lines per unit drive shaft rotation angle.

4,335,627

HYDRAULIC FLYWHEEL

Thomas J. Maxwell, 13252 N. 47th Pl., Phoenix, Ariz. 85032

Filed Sep. 28, 1979, Ser. No. 79,984
Int. Cl.³ G05G *3/00*
U.S. Cl. 74—572 **2 Claims**



1. A flywheel having a variable moment of inertia comprising:

a hollow structure of separable sections having internal means for coupling the inertia of a fluid to said hollow structure;

rotary drive means having fluid conduction means integral thereto;

means for inputting fluid to and outputting fluid from said fluid conduction means;

coupling means for coupling said separable sections of said hollow structure to said rotary drive means for rotating said separable section with said rotating drive means;

means for moving said separable sections between contacting and noncontacting states to effect the integrity of said hollow structure;

fluid retaining means for retaining fluid output from said fluid conduction means by said output means when said separable sections of said hollow structure are in their contacting state;

fluid collecting means for collecting fluid originally retained within said hollow structure which fluid is ejected therefrom when said separable sections are moved from their contacting to their noncontacting state; and

fluid circulating means for conducting fluid from said fluid collecting means to said input means of said fluid conduction means of said rotary drive means.

4,335,628

PEDAL FOR A BICYCLE

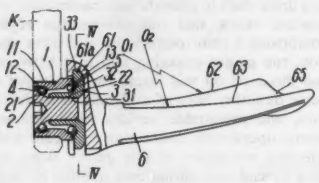
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 8, 1980, Ser. No. 166,784

Claims priority, application Japan, Jul. 23, 1979, 54-102174[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.4 **7 Claims**



1. A pedal for a bicycle, comprising a pedal shaft and a pedal body supported on said pedal shaft in rotatable relationship around the axis of said pedal shaft, said pedal body having a front foot-bearing surface and a rear foot-bearing surface, which extend in parallel to the axis of said pedal shaft, and an outer connecting portion which connects said front and rear foot-bearing surfaces at lengthwise outer ends thereof and extends longitudinally of said pedal body, both said front and rear foot-bearing surfaces being curved to have the centers of curvature above said surfaces respectively, said center of curvature of said rear foot-bearing surface being positioned axially outwardly of said pedal shaft with respect to the center of curvature of said front foot-bearing surface.

4,335,629

DRIVE TRANSMISSION UNIT INCORPORATING EXPANSIBLE-PULLEY STEPLESS SPEED CHANGER

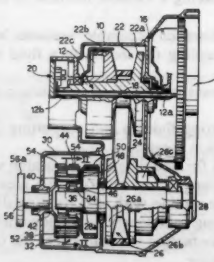
Gianluigi Falzoni, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,384

Claims priority, application Italy, Apr. 11, 1979, 67766 A/79

Int. Cl.³ F16H *37/00, 37/08*

U.S. Cl. 74—689 **2 Claims**



1. In a motor vehicle, a drive transmission unit adapted to be operatively interposed between the vehicle's engine and a differential unit connected to the half shafts of the vehicle's driving wheels, said unit incorporating an expansible-pulley stepless speed changer and comprising:

a support structure,

a primary shaft rotatably mounted in said support structure and connectable at one end to the drive shaft from the engine of said vehicle,

a secondary shaft rotatably mounted in said support structure parallel to said primary shaft,

two expansible pulleys respectively mounted fast for rotation on said primary and secondary shafts, each pulley comprising two facing frusto-conical discs one of which is rigidly connected to its respective mounting shaft and the other of which is axially slidable therealong,

a trapezoidal belt passing around said pulleys at respective radii of engagement dependent on the position of the said slidable disc of the corresponding pulley axially of its mounting shaft,

hydraulic means operable to control the axial displacement of the said slidable disc of each pulley whereby to vary said radii of engagement and change the transmission ratio between said primary and secondary shafts, said hydraulic means including a mechanical pump arranged adjacent the end of the primary shaft remote from said drive shaft, said primary shaft being hollow and the transmission unit further including a pump-driving shaft connected at one end to the said drive shaft and extending through said primary shaft to drive said pump,

an output shaft rotatably mounted by said support structure and adapted to drive said differential unit, said output shaft being arranged adjacent one end of the secondary shaft in coaxial alignment therewith, and

an epicyclic reversing unit coaxial with said secondary shaft and driven from said one end thereof, the said reversing unit providing a reduction gear stage for the transmission unit and having a rotatable output member connected to said output shaft, the reversing unit being remotely selectively settable into one of three operating states in the first of which said output shaft is arranged to rotate in the same sense as said secondary shaft, in the second of which said output shaft is arranged to rotate in the opposite sense to said secondary shaft, and in the third of which said output shaft is drivingly disengaged from said secondary shaft.

4,335,630

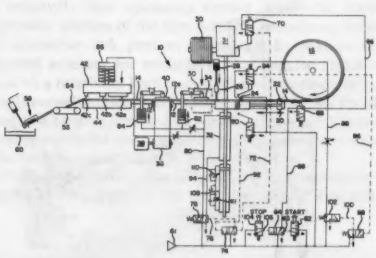
HIGH-SPEED MANUFACTURING SYSTEM FOR SABER SAWBLADES AND THE LIKE

Fred G. Gunzner, Silverton, Oreg., assignor to Acu-Edge, Inc., Woodburn, Oreg.

Filed Sep. 2, 1980, Ser. No. 183,000

Int. Cl.³ B23D *65/04*

U.S. Cl. 76—25 R **10 Claims**



1. Improved apparatus for rapidly manufacturing multiple elongate sawblades from a continuous elongate band of metal having longitudinal edges and a predetermined width dimension, said apparatus comprising:

(a) a support structure;

(b) feeder means for feeding said band of metal longitudinally in successive increments along said support structure in a feeding direction while orienting the width dimension of said band of metal in a predetermined direction perpendicular to said feeding direction;

(c) rotary cutter means for forming sawteeth in one longitudinal edge of said band of metal;

(d) means for selectively advancing said rotary cutter means toward said support structure along a direction of advancement substantially perpendicular both to said feeding direction and to said predetermined direction so as to cause said cutter means to intersect one longitudinal edge of said band of metal; and

(e) selectively-actuated severing means, located in a position following the position of said rotary cutter means along said feeding direction, for successively severing each respective sawblade from said band of metal concurrently with the advancement of said rotary cutter means toward said support structure along said direction of advancement.

4,335,631

METHOD FOR MAKING A SHEAR BLADE

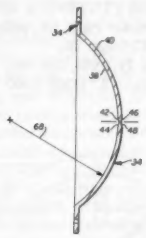
Leon A. Wirt, and Arthur A. Webb, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00143, § 371 Date Feb. 13, 1980, § 102(e) Date Feb. 13, 1980, PCT Pub. No. WO81/02263, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 13, 1980, Ser. No. 173,202

Int. Cl.³ B21K *19/00*

U.S. Cl. 76—104 A **11 Claims**



1. A method for making a shear blade (10), comprising:

(1) cutting first and second beveled surfaces (42,44) one facing the other on a first side (32) of a blank (30);

(2) depressing said blank (30) and forming a generally concave shape in said blank (30) and across said first and second beveled surfaces (42,44); and

(3) dividing said blank (30) along said first and second beveled surfaces (42,44) and forming first and second blade portions (14,16) having said first and second beveled surfaces (42,44), respectively.

4,335,632

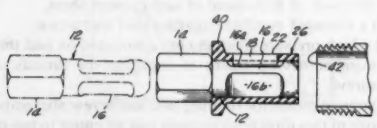
INTERNAL PIPE WRENCH

Lawrence F. Irwin, Sylmar, and Robert Millray, Saugus, both of Calif., assignors to Augerscope, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 971,071, Jan. 5, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,746

Int. Cl.³ B25B *23/08*

U.S. Cl. 81—446 **7 Claims**



1. A gripping tool for gripping the inner walls of a tubular member for purposes of applying torque thereto, comprising:

(a) a rotatable, polygonal mandrel having a plurality of longitudinally extending faces;

(b) a plurality of gripping members each having a bottom mandrel engaging surface and an upper surface defining spaced apart wall engaging edges, said wall engaging edges and said mandrel engaging surface lying in planes substantially parallel with said longitudinally extending faces of said mandrell; and

(c) yieldably resilient retaining means for retaining said bottom surfaces of each of said gripping members in close proximity with a corresponding face of said mandrel for limited movement with respect thereto, whereby when the wrench is in operating position within the tubular member increased rotational movement of said mandrel in either direction causes the leading wall engaging edge of each of said gripping members to move into gripping engagement with the inner wall of said tubular member; said retaining means comprising a generally cylindrically shaped thin wall collett member formed of a yieldably resilient material within which said gripping members are partially encapsulated and adapted for limited raidal movement with respect to said mandrel, said collett member being substantially coextensive in length with said gripping members and having a diameter substantially equal to the inner diameter of said tubular member.

4,335,633

TAILSTOCK FOR MACHINE TOOLS, IN PARTICULAR LATHES OR THE LIKE WITH ELECTRIC ACTUATOR HAVING A MONITORED THRUST

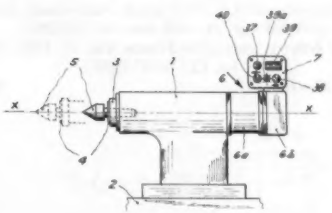
Pier C. Boffelli, San Donato Milanese, Italy, assignor to Baruffaldi Frizioni S.p.A., Milan, Italy

Filed Sep. 26, 1980, Ser. No. 191,025

Claims priority, application Italy, Sep. 28, 1979, 26101 A/79

Int. Cl.³ B23B *23/00*

U.S. Cl. 82—31 **8 Claims**

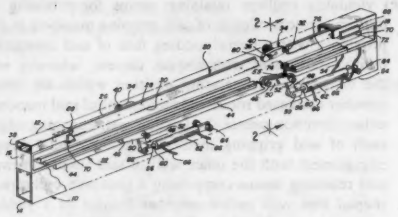


3. A tailstock for machine tools in particular for electrically operated lathes or the like machine tools, comprising a normally stationary supporting casing connectable to the bed of a said machine, a two-speed electric motor having a stator which is connected to said casing and having a rotor which is connected to a rotatable tubular member, co-axial with the axis of the tailstock centre: the rotor being directly connected with a central shaft—sufficient couple being developed by the electric motor; said central shaft being provided at its forward end adjacent said centre with a thread and at its rear end remote from said centre with a load detector, axial movement of the centre being effected by threaded means and resilient compression means between the shaft and centre, the axial load existing being sensed or detected by said load detector whose output is transmitted to control means operable so as to limit it to a pre-determined value by electrical comparison means, and an electro-magnetic locking brake being provided for the maintenance of the axial load reached by the centre.

4,335,634
WEB SEVERING DEVICE

Clifford L. Larson, Marco Island, Fla., assignor to Baldwin-Korthe Web Controls, Inc., Addison, Ill.

Division of Ser. No. 135,772, Mar. 31, 1980, Pat. No. 4,295,400.
This application May 15, 1981, Ser. No. 264,216
Int. Cl.[3] B26D 7/22
U.S. Cl. 83—13 5 Claims

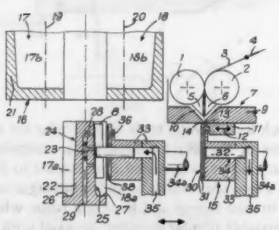


1. A process for severing a continuous web having a path of travel between a pair of parallel spaced-apart first and second carriages disposed transversely to said web and straddling the path of said web, only said first carriage carrying a severing blade, which process comprises moving said second carriage in one direction in a plane substantially perpendicularly to said web path and toward said blade-carrying first carriage to narrow the spaced-apart distance between said carriages without moving said first carriage, preventing further movement of said second carriage in said one direction during any period of time in which a relatively non-flexible, rigid object such as a human finger is disposed between said carriages, and thereafter by further movement of said second carriage in said one direction causing said blade-carrying first carriage to be moved in the opposite direction toward said web path whereby said blade is moved into severing contact with said web.

4,335,635
DEVICE FOR SEVERING AND TRANSFERRING A LABEL

Jean-Claude Hautemont, Gif sur Yvette, France, assignor to Pak Pro International N.V., Willemstad, Netherlands Antilles

Filed Apr. 21, 1980, Ser. No. 142,395
Claims priority, application France, Apr. 27, 1979, 79 10851
Int. Cl.[3] B65C 9/08
U.S. Cl. 83—160 8 Claims

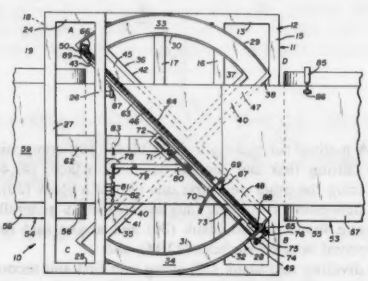


1. In a device for severing and transferring a label from a web of labels, of the type comprising rolls for feeding the label web, means for transversely severing said web in order to separate a label therefrom and transfer means adapted to seize the label at the latest at the moment of severing thereof and to transfer it to the lateral face of the forming chamber of a mold presenting a mold body composed of at least two parts which are provided with suction orifices, and separable from each other in height, so as to render accessible at least one part of said lateral face, to said transfer means which are movable at least transversely with respect to the axis of the forming chamber and parallel to the direction of severing of the label, the transfer means comprise, on the one hand, for the free end of the label web, a receiver member provided with elements for mechanically holding the edges of the free end of said web, and mounted downstream of the severing means, on a support which is movable exclusively along a straight line transverse with respect to said web end, between the position of reception of the web end and the immediate vicinity of one of the open parts of the mold body, and, on the other hand, a pneumatically controlled expelling push member mounted to slide parallel to said straight line in said mobile support, intended for expelling the severed label from the receiver member and for pushing it against said lateral face of an open mold part when this receiver member is in the immediate vicinity of said open mold part.

4,335,636
APPARATUS FOR CUTTING A MOVING SHEET

Michael J. Porter, Hanover Park, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 192,160
Int. Cl.[3] B26F 3/00
U.S. Cl. 83—177 4 Claims



1. An apparatus for cutting a newly-formed continuous gypsum board sheet moving along a conveyor into individual gypsum boards, which comprises

(a) an elongate frame,

(b) a supporting member pivotally mounted at its center vertical axis on said frame,

(c) a lead screw rotatably mounted on said supporting member,

(d) a power means for pivoting said supporting member and said lead screw through an arc alternately to one of two rest positions obliquely positioned with respect to the direction of movement of said gypsum sheet,

(e) a threaded member engaging said lead screw,

(f) a high pressure fluid jet cutter mounted on said threaded member having means of engaging the threads of said screw,

(g) power means for rotating said lead screw alternatively in one of two directions to cause said jet cutter to travel back and forth along said lead screw, and

(h) tank means for receiving the expended fluid from said jet cutter.

4,335,637
CIRCULAR SAW

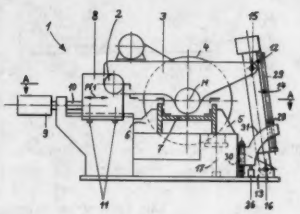
Dieter Kaltenbach, Rebweg 33, 7850 Lörrach, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 136,040

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915288

Int. Cl.³ B23D *45/04, 47/04*

U.S. Cl. 83—452 **25 Claims**



1. A cold circular saw for cutting a workpiece displaceable in a workpiece feeding direction, the cold circular saw comprising a machine support; a saw blade extending in a predetermined plane, said saw blade being displaceable in a substantially vertical saw blade feeding direction and also being swingable; means for clamping a workpiece and operative for laterally abutting against and holding the workpiece, said clamping means including at least one stationary abutment member; a swingable supporting arm arranged to support said saw blade and having one free end portion provided with a hinge for swinging said supporting arm; said supporting arm has another free end portion which is opposite to said one free end portion and further comprising a displacing element articulately connected with said other free end portion of said supporting arm and with said machine support and a carriage on which said hinge of said supporting arm is mounted, said carriage being displaceable in an adjusting direction on said plane of said saw blade and transverse to a workpiece feeding direction, relative to said machine support and said workpiece clamping means.

4,335,638
BAND-SAW MACHINE

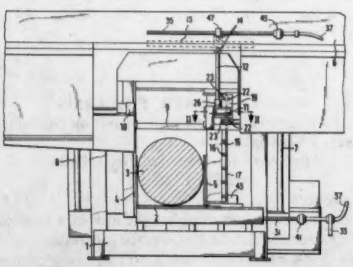
Werner Schocher, Achern, Fed. Rep. of Germany, assignor to Gesellschaft für Schneidtechnik mit beschränkter Haftung, Achern, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,331

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935790

Int. Cl.³ B23D *55/04, 55/08;* **B27B** *13/10*

U.S. Cl. 83—801 **5 Claims**



1. In a band-saw machine including a machine stand defining a substantially horizontal workpiece support region, first and second clamping jaws mounted on the stand, with the first clamping jaw being mounted to move horizontally toward the second jaw for clamping a workpiece between the jaws, a machine head mounted above the support region, means supporting the machine head for vertical displacement relative to the machine stand, an endless saw band mounted in the machine head to present a cutting reach extending above and across the support region, and two saw band guides disposed to respectively opposite sides of the workpiece support region, each associated with a respective clamping jaw and each holding the saw band in position to cut a workpiece, the improvement comprising:

first mount means connected between said first clamping jaw and said saw band guide associated therewith for permitting said associated guide to be displaced vertically without tilting relative to said first jaw;

connecting means extending between said guide associated with said first jaw and said machine head for transmitting the cutting reaction forces imposed by the saw band on that said guide to said machine head; and

second mount means connected between said connecting means and said machine head for permitting said connecting means to move relative to said head in the direction of movement of, and together with, said first clamping jaw; and

wherein said first clamping jaw is dimensioned to extend toward said machine head at least to the maximum height of a workpiece which said machine is arranged to cut.

4,335,639
PREFERENTIAL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

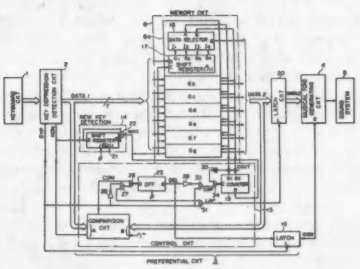
Eisaku Okamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Dec. 11, 1980, Ser. No. 215,149

Claims priority, application Japan, Dec. 20, 1979, 54-165894

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **6 Claims**



1. In a monophonic electronic musical instrument comprised of a keyboard circuit including a plurality of keys, a key depression detection means for detecting a depressed key or keys to produce key data signals assigned to the depressed keys, a musical tone generating circuit for producing a musical tone signal in correspondence with a key selected among the keys held depressed according to a most recently depressed key taking preferential order, and a preferential circuit for supplying a key data signal to the musical tone generating circuit based on said preferential order, said preferential circuit comprising:

(a) new key detection means which detects whether a depressed key is newly depressed or it has been previously depressed to produce a new key signal when the key is newly depressed, irrespectively of the relative positions on the keyboard of said newly depressed key and said previously depressed key;

(b) memory means for storing the key data signal corresponding to said newly depressed key and at least one key

data signal corresponding to a key depressed just prior to said newly depressed key, respectively received from said key depression detection means;

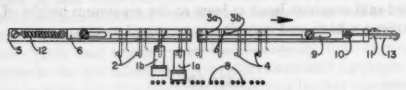
(c) control means operatively coupled to said new key detection means for reading out from said memory means the key data signal corresponding to said newly depressed key when said newly depressed key and the key depressed prior to said newly depressed key are held depressed and for reading out from the memory means the key data signal corresponding to said key depressed just prior to said newly depressed key when said newly depressed key is released with said key depressed just prior to said newly depressed key being held depressed, said musical tone generating circuit being responsive to the key data signal read out of memory means thereby to produce the musical tone signal.

4,335,640

SINGLE NOTE SOSTENUTO FOR THE UPRIGHT PIANO

Walter A. Mudgett, 2123 Savannah Hwy., Charleston, S.C. 29407

Filed Oct. 1, 1980, Ser. No. 192,935
Int. Cl.³ G10C *3/16*
U.S. Cl. 84—218 **1 Claim**



1. A sostenuto mechanism for a piano comprising: a plurality of dampers including damper heads and damper wires aligned adjacent the strings of a piano,

a hammer spring rail extending transversely of said dampers opposite said strings,

a plurality of rigid pins fixed to said hammer spring rail, each of said pins extending toward said damper wires adjacent the line of movement of an associated damper wire,

a sostenuto rod mounted on said hammer spring rail and constrained to move in the longitudinal direction of said hammer spring rail, said rod being biased in a predetermined direction when at rest,

a plurality of wire spring arms fixed at one end to said sostenuto rod and extending toward said damper wires, each of said wire spring arms having a hooked end located behind its associated damper wire when the damper wire is in its rest position against its string but extending beyond said damper wire when said damper head is moved away from its string, and

means connected to the piano sostenuto pedal for moving said sostenuto rod longitudinally along said hammer spring rail

whereby the hooked end of said wire spring arms will catch any associated damper wire which has moved away from its string and hold it against its associated pin but will pass beyond any damper wire which is still at rest.

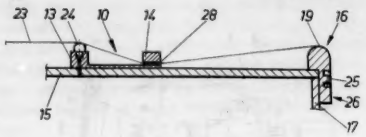
4,335,641

STRING INSTRUMENT

Dieter Höpf, Platter Strasse 67, 6204 Taunusstein 4, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,691
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 8015071[U]
Int. Cl.³ G10D *3/04, 3/12*
U.S. Cl. 84—297 R **23 Claims**

1. A string instrument, comprising: a resonance body; a neck mounted to said resonance body and having a first string-contacting saddle arranged in a first level above the upper surface of said resonance body; a string-securing device mounted to said resonance body opposite to said neck and containing a second string-contacting saddle arranged in a second level above the upper surface of the said resonance body; a string bridge on said resonance body between said neck and said string-securing device, said string bridge having a third string-contacting saddle arranged in a third level above the upper surface of said resonance body and a string-deflecting element provided on the center region of the said string bridge opposite said third string-contacting saddle and being arranged in a



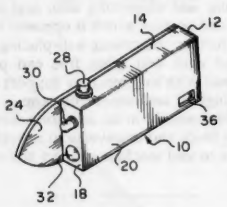
fourth level above the upper surface of said resonance body; said fourth level being arranged nearer to said upper surface of the said resonance body than said second and third levels so that the strings extending from said neck to said strings-securing device over the first and second and third saddles and through said string-deflecting element are V-shape formed between said second and third saddles.

4,335,642

STROBOSCOPIC TUNING

Gary S. Pogoda, 223 N. Douglass Ave., Margate, N.J. 08402

Filed Apr. 30, 1980, Ser. No. 144,976
Int. Cl.³ G10G *7/02*
U.S. Cl. 84—454 **7 Claims**



1. In a method for tuning a stringed musical instrument comprising:

providing a visible stroboscopic light source having a predetermined spectral content which is less than the spectral content of white light;

illuminating a portion of the vibrating string of a musical instrument with said light source;

observing said illuminated string portion through a filter means which passes substantially only light having said predetermined spectral content, and

adjusting the tension of said string until the desired stroboscopic pattern is observed.

4,335,643

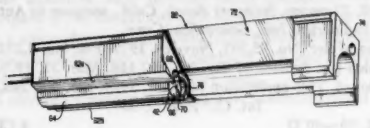
SEMI-AUTOMATIC FIREARMS

Uzi Gal, Philadelphia, Pa., assignor to Action Manufacturing Company, Philadelphia, Pa.

Filed May 16, 1980, Ser. No. 150,681
Int. Cl.³ F41C *5/06*
U.S. Cl. 89—196 **13 Claims**

1. A bolt for use in the firing mechanism of a firearm, said bolt having a section defining a bolt face for feeding cartridges from cartridge supply means into a firearm firing chamber on forward movement of the bolt, said cartridge supply means supplying cartridges from left and right sides thereof, said section having a longitudinal axis and said bolt face being substantially perpendicular to said longitudinal axis, a firing pin

passage in said section leading to said bolt face and being substantially coaxial with said longitudinal axis and said bolt having shoulder means projecting outwardly from a portion of the periphery of the bolt face for centering a cartridge in a firing position and for supporting a cartridge during removal from the firing position, a portion of the periphery of the bolt face adjacent one side of the cartridge supply means being



planar with said bolt face so that a cartridge being fed from the one side of the cartridge supply means has its base in sliding contact with the bolt face during feeding whereby a firing pin projecting from said bolt face prevents sliding of the cartridge base into the firing position, whereas a cartridge being fed from the other side of the cartridge supply means having its base in sliding contact with the projecting shoulder means during feeding.

4,335,644

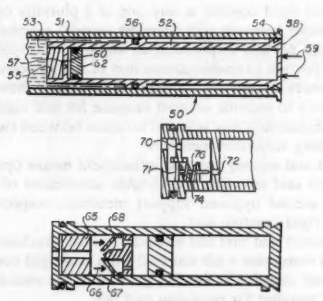
FLUIDIC RECOIL BUFFER FOR SMALL ARMS

Michael J. Goes, 221 Randolph Ave., Mine Hill, Morris County, N.J. 07801, and Albertus E. Schmidlin, 28 High View Rd., Caldwell, Essex County, N.J. 07006

Division of Ser. No. 75,470, Sep. 14, 1979, Pat. No. 4,307,653. This application May 7, 1981, Ser. No. 261,090

Int. Cl.³ F41D *11/12*

U.S. Cl. 89—198 **6 Claims**



1. A fluidic recoil buffer comprising:

first fluid containing chamber;

actuator means for applying a compressive force to fluid in said first chamber;

a second fluid containing chamber slidably positioned in said first fluid containing chamber, said second chamber dimensioned and positioned for reciprocating motion within said first chamber, said second chamber including;

seal means, slidably moveable with said second chamber, for providing a fluid seal between said first chamber and said second chamber; and

a closed rear surface on a closed end of said second chamber and an axial throttle hole in the front end of said second chamber;

fluidic means operatively disposed in said second fluid chamber for providing restricted fluid flow from said first chamber to said second chamber and substantially unrestricted fluid flow from said second chamber to said first chamber, said second chamber including;

flow restricting means for restricting fluid flow from said first chamber to said second chamber;

a flow control member, having an axial passageway therethrough, slidably disposed in said second chamber intermediate said front end of said second chamber and said flow restricting means, said flow control member moving toward said flow restricting means when the pressure drop through said flow control member reaches a predetermined design point, and said flow restricting means limiting the fluid flow through said fluid control member when said flow control member travels to a point proximate said flow restricting means; and

a floating piston member slidably disposed intermediate said flow restricting means and said closed end of said second chamber.

4,335,645

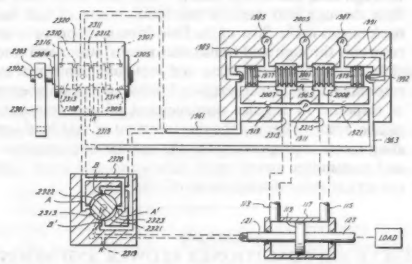
FLUIDIC REPEATER

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Division of Ser. No. 772,560, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, which is a continuation-in-part of Ser. No. 521,036, Nov. 5, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Nov. 22, 1978, Ser. No. 962,858

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—388 **18 Claims**



1. In a fluidic repeater comprising

a source of pressure fluid,

a reservoir of fluid at lower pressure than said source,

a responder including means forming a first chamber and a first movable member movable in the chamber, e.g. a cylinder and a piston movable in the cylinder,

a first fluid passage for connecting the source of pressure fluid to a first portion of the first chamber at one side of the first movable member,

a first flow restrictor in said flow passage,

a part of said flow passage downstream of said first restrictor together with said first portion of said first chamber providing a transmitter controlled volume,

transmitter means for variably venting said transmitter controlled volume to vary the fluid pressure in said first portion of said first chamber according to the degree of venting by said transmitter means.

a second fluid passage for connecting the source of pressure fluid to a second portion of the first chamber on a side of said first movable member opposite to said one side,

a second flc w restrictor in said second flow passage, a part of said second flow passage downstream of the last said flow restrictor together with said second portion of said first chamber providing a feedback controlled volume,

feedback means for variably venting said feedback controlled volume to vary the fluid pressure in said second portion of said first chamber according to the degree of venting by said feedback means,

load actuating means comprising second means forming a second chamber having a second movable member movable therein, e.g. a piston and cylinder,

passage means for supplying pressure fluid to and receiving pressure fluid from opposite sides of said second chamber at opposite sides of said second movable member, and

valve means controlling said passage means, said first movable member being connected to said valve means,

the improvement as follows:

said transmitter means comprising a fixed stator and a rotor rotatably mounted relative to the stator, said stator having a plurality of stationary fluid passages each terminating in a stationary port at a surface of the stator opposite the rotor, one of said stationary ports communicating with said transmitter controlled volume and an other of said stationary ports communicating with said reservoir, flow path means including passage means over the surface of the rotor for communicating said one stationary port, that communicates with said transmitter controlled volume, with said other stationary port, that communicates with said reservoir, with varying degrees of restriction according to the angular position of said rotor relative to said stator about the axis of rotation of said rotor,

said feedback means comprising variable flow restriction means variably communicating said feedback controlled volume with said reservoir in accordance with the extent of displacement of said second movable member and hence in response to the position of said second movable member,

the fluid path through said feedback means being independent of said transmitter means in that the fluid flowing through said transmitter means' stator and rotor does not flow through said variable restriction means of said feedback means in the flow of the fluid from said source to said reservoir through said transmitter means' stator and rotor,

said feedback means restoring said movable member of said responder to its initial position following its displacement in response to angular displacement of said transmitter means' rotor, whereby the displacement of said load actuating means is proportional to the angular displacement of said transmitter means' rotor relative to said stator without any angular displacement of said stator.

4,335,646

VEHICLE AIR CONDITIONER BLOWER AND MOUNT

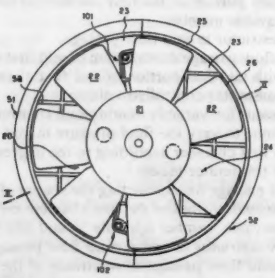
Maurice A. Jacquet, Maurepas, and Jean-Pierre Lignereux, Beynes, both of France, assignors to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Apr. 24, 1980, Ser. No. 143,316

Claims priority, application France, Apr. 24, 1979, 79 10558

Int. Cl.³ F16M *1/04*; B60H *1/26*

U.S. Cl. 98—2 **18 Claims**



1. A device for mounting a motor-blower unit at the air inlet of a heating or air-conditioning installation of the passenger space of a motor vehicle, said motor-blower unit having a motor cage and said device comprising a cylindrical cradle for receiving and supporting the motor cage and which is provided with abutments for cooperating with a lower edge of the cage, wherein the cradle comprises hooking means formed by longitudinal fingers with resilient attachment, opening out when the motor cage is driven into the cradle and bearing against the cage at the end of the driving-in movement, said fingers ending into hooks which come in engagement with an upper edge of the cage for fixing the latter against movement.

4,335,647

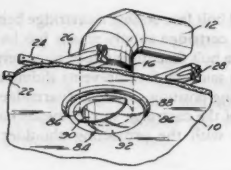
AIR DEVICE WITH FLEXIBLE MOUNTING SYSTEM

David R. Timmons, Newport Beach, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Division of Ser. No. 95,841, Nov. 19, 1979, Pat. No. 4,271,751, which is a division of Ser. No. 892,168, Mar. 31, 1978, abandoned. This application Mar. 27, 1981, Ser. No. 248,425

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—40 D **4 Claims**



1. An air terminal device for connection to the end of an air duct, comprising:

(a) a rigid conduit having an inlet end and an outlet end, said inlet end being adapted for connection to an air duct and said outlet end being adapted for connection to an air discharge device;

(b) first and second opposed support members each comprising a first portion disposed parallel to the longitudinal axis of said rigid conduit for selective non-slidable attachment to said rigid conduit at any one of a plurality of discrete positions between said opposed support members, and a second portion disposed at an angle with respect to said first portion to enable connection of said opposed support members to two spaced building structural members and thereby to provide support in space for said rigid conduit at substantially any selected location between two spaced building structural members;

(c) first and second opposed attachment means operative to enable said selective non-slidable attachment of said first and second opposed support members, respectively, to said rigid conduit; and

(d) wherein said first and second opposed attachment means each comprises a tab stamped from said rigid conduit and at least one slot in the first portion of the associated support member for receiving said tab.

4,335,648

CHIMNEY COWLS

Arthur W. Mitchell, "Sandyacre", 18 Ballyardle Rd., Kilkeel, County Down, Ireland

Continuation-in-part of Ser. No. 942,914, Sep. 18, 1978, Pat. No. 4,206,693. This application Apr. 25, 1980, Ser. No. 143,736

The portion of the term of this patent subsequent to Jun. 10, 1981, has been disclaimed.

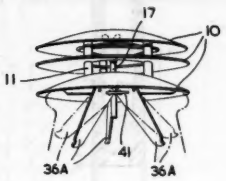
Int. Cl.³ F23L *17/02*

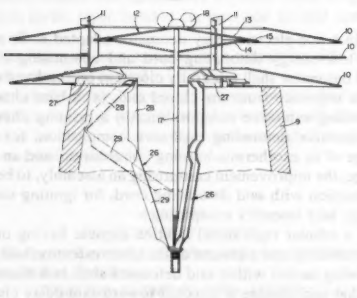
U.S. Cl. 98—59 **11 Claims**

1. A chimney cowl comprising a series of annular vanes lying in spaced horizontal planes, the uppermost and lowermost of which are parallel and substantially frusto-conical in shape, said vanes having central apertures and centered about a common axis and arranged in a predetermined vertical spaced relationship, a plurality of supports connected to said vanes and positioned parallel to and radial of said axis, the lower two of said vanes converging towards their centers to form a venturi at their inner peripheries, and a device of aero-

dynamic shape mounted co-axially with the vanes and located between the upper two vanes, the device being circular in plan and masking the central apertures in the vanes and having upper and lower cone-like air-deflecting walls arranged base-to-base about said common axis, the upper wall of the device being parallel or substantially parallel to the uppermost and lowermost vanes, and means for clamping the cowl in position to a chimney outlet comprising at least two laterally extending elongate members, each member being connected through pivot means to the lowermost vane for relative pivotal motion and to a union element, said union being movable vertically to cause pivotal movement of the members in a lateral direction towards or away from the chimney wall.

8. A chimney cowl for attachment to a chimney outlet comprising:





a cowl structure defined by a plurality of centrally apertured annular vanes arranged in spaced horizontal planes co-axially along a vertically aligned axis, a plurality of supports connected to said vanes for supporting said vanes relative to said axis in said spaced relationship;

an annular device mounted co-axially with said vanes between two adjacent vanes remote from the chimney outlet end of said cowl structure and masking the central apertures in said vanes; and

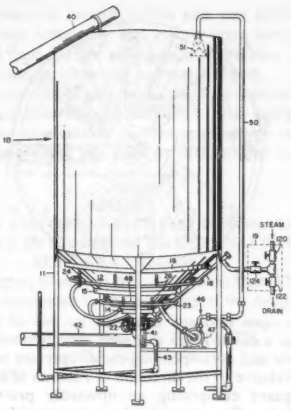
means for clamping said cowl structure to a chimney outlet, said means for clamping including at least two clamping levers, each of said levers being pivoted at a point intermediate their ends to said cowl structure and having a first end coupled to union means adjustably movable along said axis to cause said clamping levers to pivot about their pivoting points to cause the opposite ends thereof to move toward said chimney outlet to effect clamping thereto.

4,335,649

METHOD AND APPARATUS FOR PRODUCING MASA CORN

Ralph E. Velasco, Jr., and A. G. Pinson, both of San Antonio, Tex., assignors to Amigos Food Company, Inc., San Antonio, Tex.

Filed Jun. 2, 1980, Ser. No. 155,489
Int. Cl.³ A47J *27/04;* B01F *13/02*
U.S. Cl. 99—327 **12 Claims**



1. A control system for preparing large quantities of food products such as masa comprising:

first valving means for providing steam to a vat containing said food products soaking in a solution such as water;

first timing means for controlling said first valving means thereby controlling a first predetermined time period for cooking said food products;

second timing means to allow said food products to steep after said cooking for a second predetermined time period;

stepping means connected to said second timing means;

second valving means being operated by said stepping means after expiration of said second predetermined time period to provide short sequential blasts of air to said vat to roll said food products during cooling;

third timing means for interrupting said short sequential blasts of air for third predetermined time periods, said cooling being considerably longer than said third predetermined time period.

4,335,650

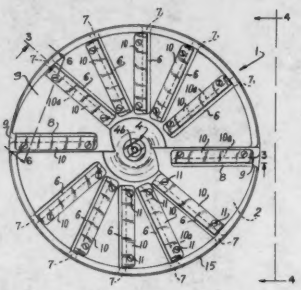
PEELING MACHINE HAVING A ROTATING CUTTER PLATE

Olivier H. C. Prevot, Aubusson, France, assignor to DITO, Aubusson, France

Continuation of Ser. No. 92,990, Nov. 9, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,928
Claims priority, application France, Nov. 10, 1978, 78 31851
Int. Cl.³ A23N *7/00;* A47J *17/18*
U.S. Cl. 99—593 **9 Claims**

1. A peeling machine for peeling vegetables and fruits, comprising a drive shaft and a rotating circular cutting plate, said plate comprising a disk having a substantially flat top surface, a bottom surface and a peripheral edge having a circular peripheral surface, a central boss formed integrally with said disk and having a bore for junction with said drive shaft, a plurality of elongated slot-like apertures arranged substantially radially through said disk from said top surface to said bottom surface and extending from proximate said central boss to proximate said peripheral edge, a plurality of cutter blades each mounted radially on the top surface of said disk proximate one of said

slot-like apertures on the rear side thereof relative to the direction of rotation of said disk, each of said cutter blades having a sharpened leading edge projecting on top of one of said slot-like apertures, a plurality of radial clearance and discharge openings through the edge of said disk each placing one of said slot-like apertures in communication with said peripheral surface, at least one upwardly protruding radial boss on the top surface of said disk shaped substantially as a trihedron, said radial boss comprising at least one radial elongated slot-like



aperture open into and extended by one of said clearance openings, a cutter blade mounted radially on said radial boss proximate said corresponding radial aperture on the rear side thereof relative to the direction of rotation of said disk, and a safety guard comprising an upwardly protruding barrier formed integrally with said disk proximate said peripheral edge of said disk, and a plurality of radial stiffening ribs each disposed projecting from the bottom surface of said disk below each of said cutter blades.

4,335,651

SETTING DEVICE FOR DENOMINATIONS IN FRANKING AND VALUE STAMPING MACHINES

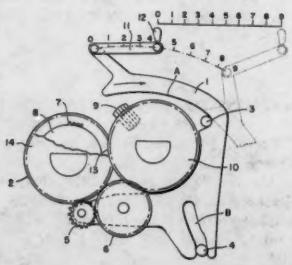
Manfred Schleuchardt, Offenbach am Main, Fed. Rep. of Germany, assignor to Postalia GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 176,047

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932424

Int. Cl.³ B41J *1/60*

U.S. Cl. 101—110 **7 Claims**



1. Setting device for denominations in franking and value stamping machines, comprising a movable lever having edges being radially curved in a given mutual relationship, pins along which said radially curved edges are guidable, a non-rotatable control disc gear, first and second mutually engageable gears mounted on said lever, a fixed control cylinder, sprockets disposed on said fixed control cylinder, a printing cylinder, a gear being disposed on said printing cylinder and rotatable by said second gear, and a value printing numeral roll being disposed on said printing cylinder, movable by said printing cylinder gear and adjustable by said sprockets, said first gear being devolvable in steps defined by said given relationship on said fixed control cylinder and said non-rotatable control disc gear when said curved edges of said lever are guided along said pins for generating a planetary drive and thrust onto said second gear to set the denominations on said numeral roll.

4,335,652

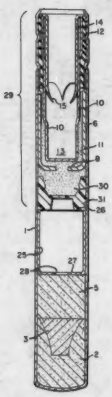
NON-ELECTRIC DELAY DETONATOR

Paul J. Bryan, Hewitt, N.J., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 15,288, Feb. 26, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,210

Int. Cl.³ F42C *15/00*

U.S. Cl. 102—202.1 **24 Claims**



1. In a non-electric delay detonator adapted to be actuated by a low-energy detonating cord and comprising a tubular metal detonator shell integrally closed at one end and containing, in sequence from the closed end, (a) a base charge of a detonating explosive composition, (b) a priming charge of a heat-sensitive detonating explosive composition, (c) a delay charge of an exothermic-burning composition, and an ignition charge, the improvement comprising an assembly, to be used in conjunction with said detonating cord, for igniting said delay charge, said assembly comprising:

(1) a tubular rigid metal ignition capsule having one open extremity and a closure at the other extemity, said capsule being nested within said detonator shell in a manner such that said closure is directed toward said delay charge;

(2) a tubular metal expansion shell integrally closed at one end, said expansion shell being deformable and positioned coaxially within said detonator shell in a manner such as to produce a spacing between the side walls of said expansion shell and of said ignition capsule, and between the closed end of said expansion shell and the closure on said ignition capsule; and

(3) a percussion-sensitive ignition charge in the spacing between the side walls of said expansion shell and of said ignition capsule, and between the closed end of said expansion shell and said closure on said ignition capsule, said closure on said ignition capsule having an axial perforation or being adapted to be axially perforated by the burning of said ignition charge, and said delay charge being adapted to be ignited as a result of the burning of said ignition charge; means being provided for sealing the charges in said detonator shell off from the atmosphere and for preventing the venting of gases resulting from the burning of said ignition charge, an open cavity extending from one end to the other of said expansion shell for

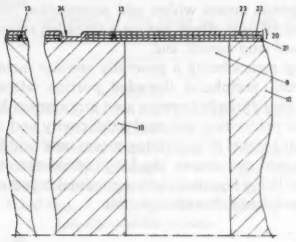
receiving a low-energy detonating cord adapted by its detonation to produce a pressure pulse that causes the ignition of said ignition charge, and means being provided for retaining said cord coaxially in said cavity.

4,335,653

ELECTRIC IGNITER WITH CONDUCTIVE BODIES AND THIN CONNECTOR

Sven-Erik Bratt, Karlskoga; Kurt Nygaard, Niederhasli, and Olof Nygards, Karlskoga, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Sep. 2, 1980, Ser. No. 183,670
Claims priority, application Sweden, Sep. 3, 1979, 7907294
Int. Cl.³ F42C *19/12*
U.S. Cl. 102—202.8 **6 Claims**



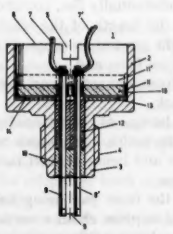
1. An electric igniter comprising:
a pair of electrically conductive bodies separated by an insulating body, said insulating body and conductive bodies forming a smooth common surface at one end thereof;
a thin connective member electrically connecting said conductive bodies, said connective member comprising:
a thin metal layer bonded on one side to said common surface,
a thin layer of inert material on a remaining side of said thin metal layer; and
a pyrotechnic charge in pressure contact with a free side of said thin layer of inert material whereby said charge is ignited in response to an electrical current through said connective member.

4,335,654

ELECTRIC IGNITER

Sven-Erik Bratt, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Sep. 2, 1980, Ser. No. 183,672
Claims priority, application Sweden, Sep. 3, 1979, 79072955
Int. Cl.³ F42C *19/12*
U.S. Cl. 102—202.8 **4 Claims**



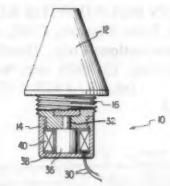
1. An electric igniter comprising:
a cylindrical casing including an externally threaded pressure resistant portion terminating at one end thereof at the base of a wider axially extending cup having an opening opposite said base;
first and second substantially straight connection legs extending from said cup portion through said threaded portions exiting a remaining end of said threaded portion;
a ferrite material circumferentially extending around that portion of said connection legs which extend through said threaded pressure resistance portion forming a bushing between said threaded pressure resistant portion and said connection legs;
a capacitor element located within said cup portion surrounding said connection legs and covering substantially all of said base portion shielding said threaded portion from radiation incident said cup opening and;
a filament connected to said connection legs external to said threaded portion whereby said filament is energized in response to an electrical current supplied by said feed wires without being energized by said incident radiation.

4,335,655

METHOD AND APPARATUS FOR DETONATING EXPLOSIVE IN RESPONSE TO DETONATION OF REMOTE EXPLOSIVE

Letcher A. Lofgren, Glenwood, Md., assignor to United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1980, Ser. No. 133,735
Int. Cl.³ F42C *11/04*
U.S. Cl. 102—209 **7 Claims**



1. An apparatus for releasing a payload from a projectile comprising:
a means for securing said payload positioned on the rear of said projectile;
a first explosive charge positioned at the forward end of said projectile;
a fuze for detonating said first explosive charge;
electromagnetic induction means positioned adjacent to said first explosive charge;
a second explosive charge positioned adjacent said means for securing;
means for detonating said second explosive charge in response to the detonation of said first explosive charge whereby said payload is released.

4,335,656

UNDERWATER LAUNCHED PARACHUTE FLARE

Bobby D. Beatty, Bloomfield; Russell D. Daniel, Bloomington; Billy J. Humerickhouse, Odon, and Richard Williams, Loogootee, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,041
Int. Cl.³ F42B *4/28*
U.S. Cl. 102—340 **3 Claims**

1. A signaling device adapted to be launched in a body of sea water beneath the surface thereof comprising,
a fuze body having an inner chamber and an aperture communicating therewith,
valve means in said fuze body normally closing said aperture

communicating with said inner chamber of said fuze body and preventing sea water from entering therein,

a projectile shell attached to said fuze body and containing an upper carrier, said upper carrier having at least one container or pyrotechnic composition and a parachute attached to said container,

an ejection charge for launching said projectile shell into the air,

squib means for igniting said ejection charge,

at least one sea water battery within said inner chamber of said fuze body for detonating said squib means, and

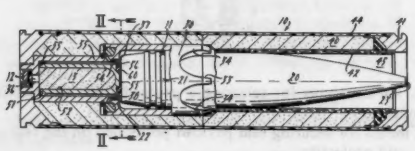
an electronic delay circuit connected between said squib means and said sea water battery for delaying current to said squib means for a predetermined time after said sea water battery is energized by opening of said valve means and entry of sea water into said inner chamber of said fuze body, said electronic delay circuit including a control rectifier and a reversible electronic integrator, said control rectifier being gated on to pass current to said squib means when said reversible electronic integrator has a change of electrical state.

4,335,657

AMMUNITION ROUND WITH RETAINED PISTON

William R. Bains, Lake Elsinore, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Aug. 13, 1980, Ser. No. 177,690
Int. Cl.³ F42B 5/02
U.S. Cl. 102—433 **6 Claims**



1. An ammunition round comprising:

a propellant charge means having an axial cavity for supplying firing power for said ammunition round;

a projectile means housed within said cavity for being fired from said ammunition round;

a control tube means for selectively covering portions of said propellant charge means facing said axial cavity thereby putting selected portions of said propellant charge in communication with said axial cavity and being generally positioned between said propellant charge means and said projectile means;

a primer means positioned generally aft of said projectile means for providing a firing force as part of a firing sequence from said ammunition round;

said control tube means including a first firing opening for providing an access to said propellant charge means from said axial cavity so that temperature and pressure conditions within said axial cavity adjacent said first firing opening can act on said propellant means thus providing for firing of said propellant charge means;

a piston means positioned aft of said projectile means so that forward motion of said piston means within said axial cavity causes forward motion of said projectile means within said axial cavity, said piston means separating said axial cavity into a forward portion and aft portion, and said piston means being conditionable between a first condition separating said primer means and said first firing opening thus providing a barrier between said primer means and said propellant means and a second condition permitting communication between said propellant means and said primer means through said firing opening;

said piston means having a generally cylindrical outer shape, a rearwardly opening recess means for receiving a charge and a flange means extending circumferentially around said piston means for obstructing the flow of combustion gases between said piston means and said control tube means, and for guiding said piston means within said control tube means, said flange means having a greater diameter than the remainder of said piston means so that the remainder of said piston means is spaced from said control tube means and can pass by said stop means and said flange means engages said stop means;

a stop ring means coupled to said control tube for limiting forward movement of said piston means thereby retaining said piston means within said ammunition round;

said control tube means having a threaded recess for receiving said stop means; and

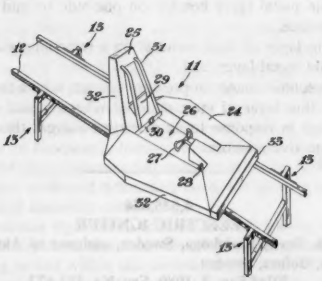
said stop means being a generally annular member with an external, peripheral threaded portion adapted to mate with said threaded recess, said stop means having a rim means protruding into said axial cavity and sized to pass forward travel of said piston means until said flange means abuts said rim means, the longitudinal extent of said rim means being less than the longitudinal extent of said external peripheral threaded portion.

4,335,658

DOWNHILL SLIDE SYSTEM

James B. VanderKelen, Midland, Mich., assignor to Snow Machines Incorporated, Midland, Mich.

Filed Oct. 10, 1979, Ser. No. 83,401
Int. Cl.³ A63G 21/04
U.S. Cl. 104—69 **2 Claims**



1. A mountain slide system comprising:

a double-rail track, each rail being of substantially rectangular cross-section with top, bottom, and inside vertical faces each substantially flat, continuous and unobstructed throughout the length of the track, and being mounted well above the ground on supports attached to it along its outside vertical face; and

a cart having front and rear wheel pairs mounted to support it on the track,

each wheel being of substantially constant diameter throughout its width, such width considerably exceeding the diameter and being at least twice that of the rail on which it runs,

the wheels of the front pair being held in separate mounts each adapted to pivot about a vertical axis to allow steering the cart relative to the track,

a guide member for each supporting wheel mounted on the cart in position to bear on the vertical inside face of the corresponding rail to restrain the wheel from sliding laterally outward off the rail, said guide members for each pair

of wheels being spaced apart a distance sufficiently less than the gauge of the track to afford substantial steering clearance, the guide members of the front wheels being rubbing blocks and of the rear wheels being smaller wheels with vertical axles,

a pair of brakes operable by the rider, each including a pad movably mounted below a rear supporting wheel in position to bear on the bottom face of the corresponding rail when actuated or when the rear of the cart tends to jump vertically off the rail,

the cart also having mounted thereon front and rear pairs of ground handling wheels for rolling the cart when off the rails, the front pair of such handling wheels also serving as retaining wheels to restrain the supporting wheels from lifting substantially above the rails, one such front handling wheel being mounted below each front supporting wheel in position to bear on the bottom of the corresponding rail, and

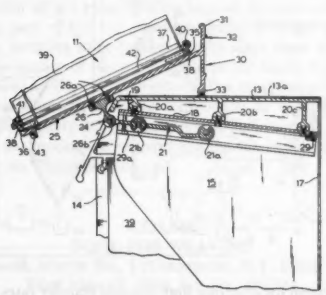
steering means operable by the rider of the cart to control the pivoting of the steerable wheels.

4,335,659

RESTORABLE GANG APPARATUS FOR TELEPHONE BOOK BINDERS

Robert N. Azzato, Phoenix, Ariz.; Henry N. Staats, Deerfield, and Neal J. Morrissey, Chicago, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.

Filed Sep. 7, 1979, Ser. No. 73,568
Int. Cl.³ A47B *97/04*
U.S. Cl. 108—28 **6 Claims**



1. In a restorable gang apparatus for one or more telephone books including a main frame having a top shelf and spaced end plates depending downwardly generally at opposite ends of the shelf with one or more telephone books being normally storable on the bottom side of the shelf, the improvement comprising:

a plurality of book mounting units suspended from beneath the top shelf between the spaced end plates in a storage position and with each unit comprised, as follows:

a track,

an inclined track hanger means suspending the track in an inclined position with a forward end of the track being more elevated than a rearward end of the track,

a truck having slidable bearing means mounted on the track for back and forth movement on the inclined track,

telephone book carrier structure beneath said track,

rotatable pivot means suspending said telephone book carrier structure from said truck,

means for mounting the telephone book onto said telephone book carrier structure, and

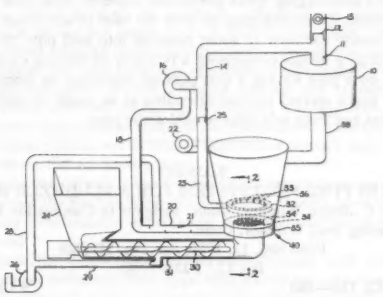
a handle operatively connected to said telephone book carrier structure and pullable in a direction causing said truck to move upwardly on said track and for placement of said rotatable pivot means in adjacency to a front edge of said top shelf and for then enabling the telephone book carrier structure to rotate on its rotatable pivot means for positioning at least a portion of said telephone book carrier structure in overlying relation to said top shelf for placing the telephone book carrier structure and the telephone book in a viewing position, the vertical axis of the rotatable pivot means being off center with respect to the center of gravity of the telephone book carrying structure prohibiting counter rotation of the telephone book carrying structure when in an at rest telephone reviewing position, said telephone book carrier structure having an upwardly extending flange positioned at its outer end with a lower portion of the flange comprising said handle and by an upper portion of said flange having a top shelf engaging end for supporting the telephone book carrier structure and the telephone book when in a viewing position.

4,335,660

APPARATUS AND METHOD FOR FLUE GAS RECIRCULATION IN A SOLID FUEL BOILER

Kenneth L. Maloney, Laguna Beach, and Nick B. de Volo, Irvine, both of Calif., assignors to Research Cottrell Technologies, Inc., Irvine, Calif.

Filed Jun. 2, 1980, Ser. No. 155,672
Int. Cl.³ F23B *5/02*
U.S. Cl. 110—206 **32 Claims**



1. In a solid fuel fired boiler having a combustion chamber, a fuel grate means for supporting a solid fuel bed, said solid fuel bed disposed within said combustion chamber for purposes of providing an energy source for combustion, and fuel means allowing for the exit of gaseous products from the combustion of the solid fuel within said combustion chamber, the improvement comprising:

(a) means for recirculating a first predetermined quantity of gaseous products from said flue means to a bottom surface of said solid fuel bed, said quantity of gaseous products having an amount of moisture and carbon dioxide sufficient to lower the temperature of said solid fuel bed on said fuel grate;

(b) means for mixing said recirculated gaseous products with air prior to recirculating said gaseous products to said solid fuel bed, said means for mixing forming a first mixture of said gaseous products and air;

(c) over-fire air means for providing a second mixture of a second predetermined quantity of gaseous products from said flue means and air as over-fire air above said solid fuel bed;

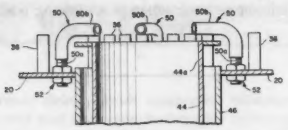
whereby said solid fuel bed operates at a lower temperature and the combustion of the solid fuel is more chemically active.

4,335,661

FLUIDIZED BED HEAT EXCHANGER HAVING AN AIR ASSISTED BED DRAIN

Robert D. Stewart, Verona, and Thomas E. Taylor, Bergenfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 24, 1980, Ser. No. 190,299
Int. Cl.[3] F23G 7/00
U.S. Cl. 110—245 7 Claims



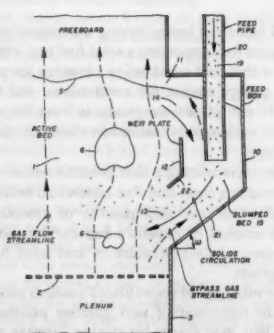
1. A fluidized bed heat exchanger comprising a perforated plate adapted to support a bed of particulate material, means for introducing air through the perforations to fluidize said particulate material, means for introducing additional particulate material to said bed, a drain pipe communicating with said bed for discharging spent particulate material from said bed, and means for discharging air over the inlet of said drain pipe to promote the flow of spent material into said pipe, the air discharging means comprising a plurality of nozzles each defined by a pipe having a first portion extending up from said plate and a second portion extending at an angle to said first portion and over said inlet of said drain pipe.

4,335,662

SOLID FUEL FEED SYSTEM FOR A FLUIDIZED BED

Brian C. Jones, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 12, 1980, Ser. No. 186,924
Int. Cl.[3] F23D 1/00
U.S. Cl. 110—263 9 Claims



1. A feed system for a combusting fluidized bed, including,

a bed which includes crushed solid fuel to be burned,

a source of air for combustion flowing up through the bed in the form of bubbles and fluidizing the bed during combustion,

a compartment structure positioned at one side of the active fluidized bed,

a wall with an upper and a lower opening between the active fluidized bed and the compartment,

a slumped bed positioned within the compartment receiving solid material from the upper portion of the active fluidized bed through the upper opening in the wall to maintain a hydrostatic head difference between the slumped bed and active fluidized bed at the lower opening between the compartment and active bed,

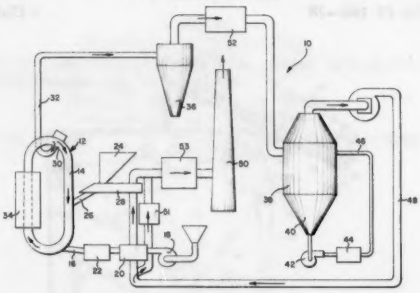
and means for supplying fresh solid fuel to a point below the level of the slumped bed and a predetermined distance from the lower wall opening to avoid a residence time for the fresh fuel in the compartment which would cause volatilization and ignition of the fuel and to establish a flow of the fresh fuel into the fluidized bed with material of the slumped bed passed through the lower opening with the force of the hydrostatic heads.

4,335,663

THERMAL PROCESSING SYSTEM

George C. Terrell, Foxboro, Mass., assignor to Conservation Technologies, Inc., Providence, R.I.

Filed Nov. 19, 1979, Ser. No. 95,494
Int. Cl.[3] F23D 1/02
U.S. Cl. 110—264 5 Claims



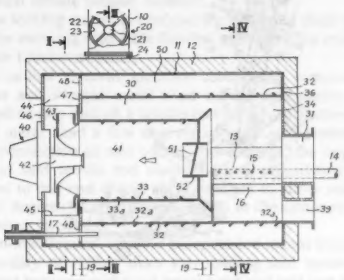
1. A system for effecting high thermal transfer rates between a solid or liquid and a carrier gas comprising, in combination, a reaction chamber, means for continuously feeding solid or liquid material in a finely divided state in said chamber, means for continuously introducing said gas to said chamber and for establishing and maintaining a high velocity gas stream in said chamber such that substantially all the solid or liquid material is entrained therein, whereby an interaction takes place between said material and said gas, means for controlling the thermal energy content of said material-bearing gas steam, means for recycling a substantial fraction of said material-bearing gas stream, means comprising an exit port and conduit for continuously removing a portion of the gas stream containing entrained solid or liquid material from said reaction chamber, and means for separating said entrained solid or liquid material from said removed portion after removal from said reaction chamber, said reaction chamber being generally toroidally shaped and said carrier gas introduction being through a side wall of a toroidal surface thereof and in the direction of the desired flow, said introduction being at such a flow rate that the desired velocities are established and maintained, the solid or liquid particulate material also being introduced through said side wall of the toroidal chamber and in the same direction of flow as that assumed by the carrier gas, the proportion of material flowing within the toroidal surface relative to the total amount of material introduced therein being controlled by the position and geometry of the exit port and conduit.

4,335,664

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF COMBUSTIBLE MATERIAL

Jean M. Lucas, Paris, and Jean F. Molle, Choisy-le-Roi, both of France, assignors to Cemagref, Antony, France

Filed Oct. 10, 1979, Ser. No. 83,528
Claims priority, application France, Oct. 11, 1978, 78 28963
Int. Cl.³ F23G 5/00
U.S. Cl. 110—346 9 Claims



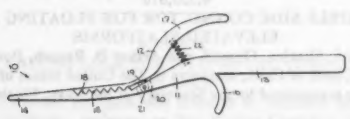
1. A method for the thermal treatment of fine combustible materials by suspending said materials in a stream of hot gases, which method consists in introducing the materials to be treated into a cylindrical enclosure of horizontal axis, in creating a stream of hot gases flowing around the said axis and in recycling part of the hot gases produced in order to sweep along the particles to be treated and to place them in suspension in the stream of hot gases, close to the inside wall of the enclosure, so as to treat uniformly the fine materials of a widely varied granulometry injecting combustion air into the enclosure in the vicinity of the longitudinal end thereof, and discharging the products resulting from the thermal treatment of the materials from the same end.

4,335,665

TOOL FOR WEAVING

John Russell, Martin Rd., LaGrangeville, N.Y. 12540

Filed May 15, 1980, Ser. No. 150,244
Int. Cl.³ D05C 15/06
U.S. Cl. 112—80 10 Claims



1. A tool for weaving comprising

a first elongated element having, a smooth tapered portion at one end, a handle portion at an opposite end offset from said tapered portion, a curvilinear element secured to said handle portion to define a finger-grip and a material gripping portion intermediate said ends;

a second element pivotally mounted on said first element at a pivot point between said material gripping portion and said handle portion, said second element having a shaped portion at one end spaced from said handle portion and a material gripping portion at an opposite end facing and mating with said material gripping portion of said first element to define a smooth outer contour for passage through a mesh opening of a backing; and

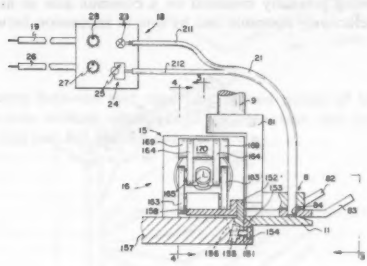
means biasing said material gripping portions of said elements into mating engagement with each other.

4,335,666

STRIP SEVERING MECHANISM FOR SEWING MACHINES

Konstantin H. Schwaab, Aichwald-Lobenrot; W. Andreas Petzold, Überlingen, and Werner A. Glöckle, Besigheim, all of Fed. Rep. of Germany, assignors to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 180,715
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935405
Int. Cl.³ D05B 37/04
U.S. Cl. 112—130 8 Claims



1. Apparatus for trimming tapes and the like and adapted for use on a sewing machine having stitch-forming means for attaching the tape to a workpiece both of which are progressively moved through the machine, a throat plate, vertically movable presser bar means and a presser foot assembly including a shank adapted to operatively secure a presser foot sole to the presser bar, said trimming apparatus comprising:

stationary blade means arranged beneath the presser bar means and over which the workpiece and tape travel;

second blade means adapted for cooperation with the stationary blade and normally held out of contact therewith above the advancing tape;

means for actuating the second blade means to cause it to sever the binding from the workpiece along a line extending substantially coextensive with the workpiece edge; and

means for controlling the actuating means, said control means includes a fiber optic light source one end of which is mounted in said presser foot sole opposite a reflecting surface on said throat plate, the other end of said fiber optic light source is connected to a control device including means responsive to a workpiece passing between a light path defined by the path between the first end of the fiber optic light source and the reflective surface and adapted to timely energize said actuating means whereby moving the second blade means into a cutting relationship with said tape.

4,335,667

PATTERN SELECTION ARRANGEMENT FOR A MULTIPLE PATTERN SEWING MACHINE

Howard L. Beckerman, Middleton, N.J., and Charles L. Mauro, New York, N.Y., assignors to The Singer Company, Stamford, Conn.

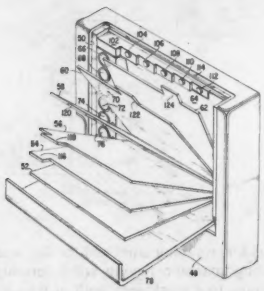
Filed Oct. 30, 1980, Ser. No. 202,204
Int. Cl.³ D05B 3/02
U.S. Cl. 112—158 E 6 Claims

1. In a multiple pattern sewing machine having stitch forming instrumentalities positionally controlled over a predetermined range between stitches to produce a selected pattern of feed and bight controlled stitches from a plurality of different patterns, static memory means for storing pattern stitch information for said plurality of patterns, means operating in timed relation with said sewing machine for recovering selected pattern stitch information from said static memory means, and

actuating means responsive to said pattern stitch information for influencing the stitch forming instrumentalities to produce a pattern of stitches corresponding to the selected pattern stitch information, an operator influenced stitch pattern selection arrangement for selecting any one of said plurality of different patterns comprising:

first switch means for operator selection of a pattern from a first group of said plurality of different patterns;

second switch means for selecting a pattern from a second group of said patterns consisting of the remaining ones of said plurality of different patterns, said second switch means including a first plurality of switches, a second plurality of switches and a plurality of plates, said plates being pivotally mounted on a common axis so as to be selectively movable one by one in succession between a



first substantially vertical position and a second substantially vertical position, only one at a time of said plates being visible in said first position, each of said plates including means for actuating a respective one of said first plurality of switches when each said plate is in said first position, said second plurality of switches being arranged on said sewing machine adjacent an edge of the plates in the first position and adapted for operator actuation thereof, the sewing machine including means responsive to actuation of one of said second plurality of switches for selecting a pattern from said second group of patterns corresponding to the combination of the actuated one of said second plurality of switches and the visible one of said plates in said first position; and

means mounted on said sewing machine for selectively covering said second switch means from view and operation.

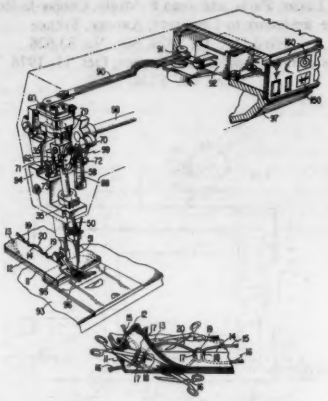
4,335,668

PATTERN CONTROLLED SEWING MACHINE FOR PRODUCING TAILOR TACKS

Charles R. Odermann, Montville, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 7, 1981, Ser. No. 290,893
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **4 Claims**

1. A tailor tack producing arrangement in a sewing machine having an endwise reciprocatory thread carrying needle, a work feeding mechanism, needle reciprocation interrupting means effective during operation of said work feeding mechanism, and a static electronic memory for storing stitch pattern information for controlling said work feeding mechanism and said needle reciprocation interrupting means, said tailor tack producing arrangement comprising stitch pattern information stored in said electronic memory for influencing the formation of a recurring stitch pattern comprising two successive endwise needle reciprocations with one intervening work advance by said work feeding mechanism followed by operation of said needle reciprocation interrupting means during a predetermined multiplicity of successive work advance increments by said work feeding mechanism, and operator influenced means on said sewing machine for selecting said recurring stitch pattern information in said electronic memory to produce



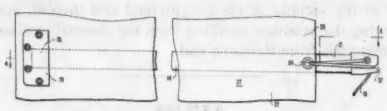
widely spaced groups of two closely spaced stitches along any desired prospective line of stitches and severable for delineating said prospective line of stitches by tailor tacks.

4,335,669

SAIL BATTEN IMPROVEMENTS

John Hackney, 1026 NW. 16th St., Stuart, Fla. 33494

Filed May 2, 1977, Ser. No. 793,087
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—103 **19 Claims**



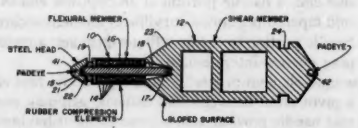
1. A sail batten provided on the aft end with jam means to cleat a line passing from the leech of the sail containing the batten to constrain the batten.

4,335,670

FLEXIBLE SIDE CONNECTOR FOR FLOATING AND ELEVATED PLATFORMS

Clifford I. Skaalen, Oxnard, and Arthur B. Rausch, Port Hueneme, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1980, Ser. No. 168,974
Int. Cl.³ B63B *21/56*
U.S. Cl. 114—249 **16 Claims**



1. A connector system for securing floating and elevated platforms together into a greater platform area while providing integrity and flexibility between platforms, comprising:

a. a first female tubular member normally mounted in the side of a first platform means which is to be connected to a second platform means;

b. a male flexural means comprising a large shear member having an outer diameter nearly equal to the inner diameter of said female tubular member and in-line flexural member of substantially smaller diameter than said shear member; said large shear member being operable to transmit vertical and lateral shear loads from one platform to another, and said smaller diameter in-line flexural member operable to allow relative rotation between platforms in the floating mode;

c. said male flexural means operable to slideably fit within said first female tubular member;

d. a first locking means in conjunction with said shear member for securing said male flexural means within said first female tubular member;

e. said in-line flexural member comprising compression means and a rigid metal head means articulately connected to one end of a tensile rod element to allow said rigid metal head a few degrees of angular movement at said connection to said tensile rod element; the opposite end of said tensile rod element being articulately connected to one end of said shear member to allow said rod a few degrees of angular movement at the connection to said shear member;

f. said in-line flexural member compression means including a plurality of rubber discs surrounding said tensile rod element between said rigid metal head and said one end of said shear member, said rubber discs bearing against said rigid metal head and against the said one end of said shear member;

g. said male flexural means also being operable to be partially extended from said first female tubular member such that said in-line flexural member and a portion of said shear member are extended sufficiently to be introduced into a second female tubular member which is mounted in an adjacent second platform means; said first and said second female tubular members being of substantially the same configuration and dimensions;

h. a second locking means in conjunction with said in-line flexural member for securing the extended portion of said male flexural means within said second female tubular member whereby said first and second platforms are connected together; said in-line flexural member being of substantially smaller diameter than the inner diameter of said second female tubular member to allow substantial flexing action of said in-line flexural member within said second female tubular member thereby permitting considerable relative roll motion between said first and said second connected together platform means while simultaneously said shear member provides a shear capability between the two platform means.

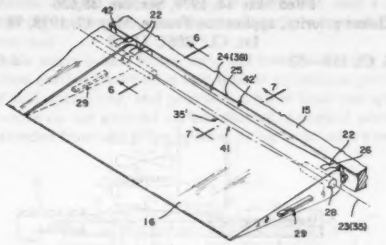
4,335,671

FLAP LEADING EDGE FOR HYDROFOIL VESSELS AND THE LIKE

Gary J. Warner, Issaquah, and Kenneth R. Meldahl, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1980, Ser. No. 169,732
Int. Cl.³ B63B *1/24*; B64C *9/30*
U.S. Cl. 114—274 **11 Claims**

1. An improved high performance fluid foil having a plurality of trailing edge control flaps mounted thereon, said foil having a trailing edge machined as a radius at constant percent of chord over the entire span of said foil, a plurality of control flaps each having a leading edge and a trailing edge, a plurality of pairs of span-wise spaced hinge means for connecting said leading edge of each of said plurality of flaps to said foil trailing edge with said flap leading edges and said foil trailing edge being spaced apart by a gap extending the entire span-wise extent of each of said flaps, said flap leading edges each being contoured so that said gap is greater at the mid-point between said span-wise spaced hinge means than in the region of said hinge means when said flaps are in an undeflected state so that upon controlled angular rotation of said flaps out of the plane of said foil, the central portions of said flaps have freedom for fluid induced deflection relative to said foil trailing edge at the



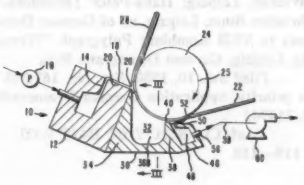
mid-points between said span-wise spaced points of hinged connection without interference between said flap leading edges and said foil trailing edge.

4,335,672

APPARATUS FOR COATING A WEB WITH A VISCOUS COATING MATERIAL

Karlheinz F. Krussig, Egelsbach, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 9, 1981, Ser. No. 252,430
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014816
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—50 **9 Claims**



1. Apparatus for coating a moving web with a viscous coating material, the apparatus being of the type having

an extrusion coater for discharging the coating material onto the web,

means for guiding the web in a first direction past the coater such that a bridge of coating material is formed between the web and the coater as the web moves therepast,

a suction chamber having a wall disposed within a predetermined clearance distance of the web, the suction chamber being operable to draw the bridge by suction in a direction opposite the first direction to prevent the movement of the web past the coater from rupturing the bridge,

wherein the improvement comprises:

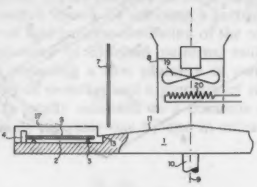
a die-shaped exhaust device having a die slot and a predetermined number of exhaust openings therein, the exhaust device generating the suction within the chamber by withdrawing air therefrom through the clearance and the die slot, the air drawn into the exhaust device being exhausted therefrom through the exhaust openings, the cross-sectional area of the exhaust device being from 0.5 to 50 times the cross-sectional area of the die slot divided by twice the number of exhaust openings.

4,335,673

APPARATUS FOR THE COLORING OF SLIDES

Marcel J. Fixot, La Basse Chevrie, 35590 L'Hermitage, France

Filed May 14, 1979, Ser. No. 38,636
Claims priority, application France, May 17, 1978, 78 15167
Int. Cl.³ B05C *11/08*
U.S. Cl. 118—52 6 Claims



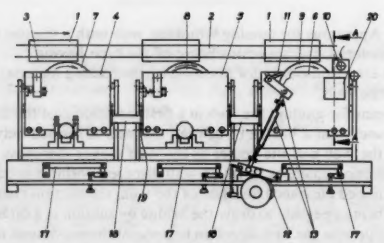
1. Apparatus for coloring slides having smear preparations thereon, said apparatus comprising rotatable means having a plurality of shallow recesses circumferentially distributed around the periphery thereof, said recesses being separated from each other by sidewall swellings and being open at the periphery of said rotatable means, means in each of said cavities for supporting a slide in a position which is elevated above the bottoms of said recesses far enough to enable a liquid coloring reagent to spread under said slide responsive to capillary action, means for rotating said rotatable means at either a high speed or a low speed RPM, and means for selectively introducing a reagent into each of said recesses, the reagent being introduced from the central area of said rotating means, whereby said reagent may be distributed under a slide by low speed centrifugal forces and expelled from under said slide by high speed centrifugal forces.

4,335,674

APPARATUS FOR APPLICATION OF A HOT MELT GLUE ONTO THE BACK SURFACES OF BOOK BLOCKS

Gerald Winker, Leipzig; Hans-Peter Thrandorf, Grossdalzig, and Christian Blum, Leipzig, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jul. 10, 1980, Ser. No. 167,318
Claims priority, application German Democratic Rep., Aug. 13, 1979, 214943
Int. Cl.³ B05C *1/02;* B42C *9/00*
U.S. Cl. 118—110 10 Claims



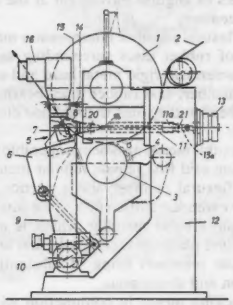
1. In an apparatus for application of hot melt glue to back surfaces of blocks, particularly for glueing book blocks, the combination comprising means for transporting blocks in a longitudinal direction adapted to support the blocks with their back surfaces oriented in a downward direction; a plurality of glue pans containing a glue to be applied to the blocks and positioned below said transporting means; and a plurality of rotary glueing rollers sequentially positioned in said longitudinal direction and each supported in the respective glue pan and adapted to contact the back surfaces of the blocks being transported, at least two of said glueing rollers having a conical outer surface and being set at an angle toward each other, said at least two glueing rollers together with the respective glue pans in which said rollers are supported being adapted to pivot with respect to the blocks transported in said longitudinal direction, at least one of said glueing rollers positioned after said two glueing rollers in said longitudinal direction having a cylindrical outer surface to provide for uniform application to the block back surfaces of glue, distributed in fan-like fashion.

4,335,675

COATING APPARATUS

Hartmut Waldvogel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,692
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931800
Int. Cl.³ B05C *1/08, 11/02*
U.S. Cl. 118—126 4 Claims



1. A coating apparatus for coating a moving web, comprising:

a machine frame;

a coating mechanism for applying a coating material to a web moving through said coating apparatus;

a scraper device, comprising a scraper holder and a scraper element supported on and movable with said scraper holder; said scraper holder and said scraper element both extending transversely to the direction of travel of the web; said scraper element being for scraping excess coating material from the web; said scraper element being movable, along with said scraper holder, relative to said machine frame among three positions, said three positions being a rest position in which said scraper element is relatively remote from the web, a ready position in which said scraper element is relatively close to the web, and an operating position in which said scraper element scrapes the web; and

positioning means for moving said scraper element among said positions; said positioning means including a swing lever pivotally mounted to a swing axis on said machine frame, and said scraper holder being fastened to said swing lever remote from said swing axis; a positioning member connected with said swing lever for moving said scraper element together with said scraper holder from said rest position to said ready position; said positioning means further comprising a pneumatic pressing element connected in series with said positioning member for operating through said positioning member to displace said swing lever from the position of said swing lever wherein said scraper element is in said ready position to the position of said swing lever wherein said scraper element is in said operating position;

said positioning means further comprising a stop secured to said machine frame for being abutted by said swing lever

for positioning said swing lever where said scraper element is in said operating position; a positioning motor for displacing said stop in such a manner as to vary said operating position, thereby to adjust the pressure of said scraper element on the web.

4,335,676

DEVICE FOR REGULATING A GASEOUS FLOWSTREAM INTRODUCED INTO A SPOUTED BED GRANULATING AND/OR COATING APPARATUS

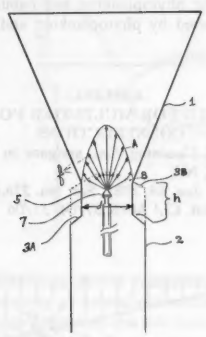
Christian Debayeux, Toulouse; Hubert Lacroix, Villeneuve Tolosane, and Felix Sternicha, Toulouse, all of France, assignors to Societe Chimique des Charbonnages S.A., Paris La Defense, France

Filed Dec. 1, 1980, Ser. No. 212,047

Claims priority, application France, Nov. 30, 1979, 79 29463

Int. Cl.³ B01J *2/16;* **B05C** *5/00*

U.S. Cl. 118—303 **3 Claims**



1. In an improved device for introducing a gaseous flowstream in an apparatus for granulating and/or coating particles in a spouted bed, of the type having a downwardly converging frustoconical part connected at the lower portion thereof to a pipe duct for introducing a gaseous flowstream and coating material, the pipe duct having an upwardly converging frustoconical part, the connection to the pipe duct located at the upper part of the upwardly converging frustoconical part, and the narrowest portion of both the upwardly converging and downwardly converging frustoconical parts having a diameter d, the improvement comprising:

flow directing means positioned between and connecting the downwardly converging frustoconical part to the upwardly converging frustoconical part for generating a substantially upwardly directed gaseous flowstream to create a pocket devoid of particles at the base of the downwardly converging frustconical part for homogeneously distributing the gaseous flowstream for granulating particles in the spouted bed, and said flow directing means comprising a cylindrically shaped hollow member having said diameter d, and a height h equal to 0.5 d to 0.66 d.

4,335,677

COATING OF THE INNER SURFACE OF TUBES

Koji Nagata; Akio Ogiso, and Kyuji Sudo, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,714

Claims priority, application Japan, Oct. 25, 1979, 54-147890[U]

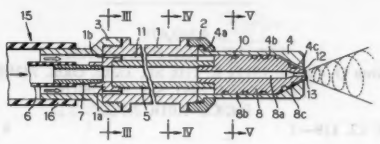
Int. Cl.³ B05C *7/02*

U.S. Cl. 118—306 **7 Claims**

1. A spray coating tool for continuously and gradually coating the inner surface of a tube by means of spraying a paint from a nozzle, while being shifted inside along the axial direction of said tube, in which said nozzle comprises:

a nozzle cap consisting of a hollow cylindrical portion, a hollow conical portion extended therefrom, and a gas blowing opening at a zenith of said hollow conical portion, and

a nozzle insert in said nozzle cap, said insert consisting of a prism portion inscribed in said hollow cylindrical portion of said nozzle cap, and provided with at least one spiral groove on the external surface thereof, a conical portion extended from said prism portion, being faced with a small



gap to the inner surface of said hollow conical portion of said nozzle cap, and a paint supply passage extending through along the axis of said nozzle insert,

whereby atomizing gas which is passed between said nozzle cap and said nozzle insert, being imparted a straight going force by a plurality of straightly elongated grooves formed between the inner surface of said nozzle cap and each of the sides of said prism portion and a spirally going force by said spiral groove or grooves, will be blown through said gas blowing opening so as to spirally spray in atomization the paint supplied through a passage along the axis of said nozzle insert.

4,335,678

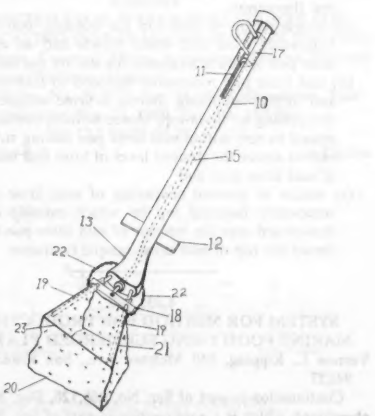
SANITARY CATCHER AND SCOOPER

Philip A. Garza, and Barbara A. Carter, both of 2062 N. Damen Ave., Chicago, Ill. 60647

Filed Apr. 15, 1980, Ser. No. 140,473

Int. Cl.³ A01K *23/00, 29/00*

U.S. Cl. 119—1 **2 Claims**



1. A sanitary catcher and scooper device comprising: a tubular handle having a vertical slot at the upper end thereof, being attached on the opposite or lower end at an angle to diverging flexible rods, said flexible rods being a holder means for a drawstring type disposable bag, which is inserted on said flexible rods through the drawstring casing of said bag; a control bar having a pair of openings which is inserted on said flexible rods, and a rod thru said tubular handle attached at the lower end to the center point of said control bar, and affixed at

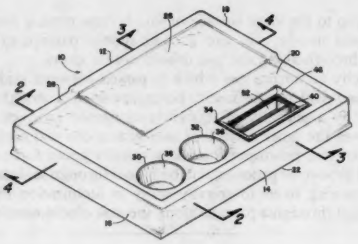
the upper end to a guide, with a handle protruding thru the slot in said tubular handle, a hook near the juncture of said tubular handle and said flexible rods, over which the drawstring of said bag is looped, to close and retain said bag when pushed off said flexible rods, such that, by moving said handle forward through said slot of said tubular handle said control bar pushes said bag off said flexible rods, said drawstring remains over said hook, thereby closing and retaining said bag, so that by elevating the lower end of said tubular handle said bag will slide off said hook for disposal, thereby eliminating the necessity of handling said bag and maintaining the device in a sanitary condition.

4,335,679

FELINE CAGE PLATFORM

Milton O. Carlin, 13111 E. 11th St., Tulsa, Okla. 74108

Filed May 4, 1981, Ser. No. 260,098
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **4 Claims**



1. A platform for supporting a confined domestic cat comprising:

(a) a frame having a top with downwardly depending sidewalls structure circumferentially attached to the periphery of said top with said sidewall structure terminating at a lower edge forming a base to support the frame;

(b) said top having a portion dimensioned to allow said cat to rest thereupon;

(c) recess means in said top for holding, below said top, removable food and water bowls and an open-topped litter pan which is available for use by the said cat;

(d) said litter pan removably fastened to said recess means and further including therein a urine sample receptacle comprising an open-top, closed-bottom container dimensioned to rest within said litter pan having sidewalls that extend above the desired level of litter and below the top of said litter pan; and

(e) means to prevent scattering of said litter including a removably fastened top lip which extends inward and downward into the interior of said litter pan terminating above the top of said urine sample container.

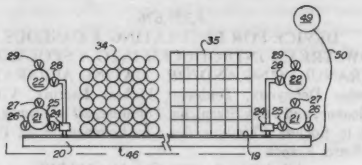
4,335,680

SYSTEM FOR METHOD FOR PRODUCTION OF MARINE FOOD USING SUBMERGED PLATFORMS

Vernon L. Kipping, 540 Melrose Ave., San Francisco, Calif. 94127

Continuation-in-part of Ser. No. 968,128, Dec. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,697, Mar. 28, 1977, Pat. No. 4,137,869. This application Jul. 14, 1980, Ser. No. 168,049
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—3 **12 Claims**

1. A system for the production of marine food comprising an open platform, said platform comprising a flooring, buoyancy tanks around the perimeter of said flooring and including at least two substantially parallel, said buoyancy tanks and a plurality of air reservoir tanks extending transversely between said two opposed buoyancy tanks, said air reservoir tanks containing compressed gas, said buoyancy tanks being partially filled with water, first means located totally below the surface of the water for maintaining said platform submerged at a selected depth in an open body of water so that said platform is not subjected to wave action on the surface, means for supplying nutrients to said platform over an extended period of time, a buoyancy tank and a cluster of a plurality of cylinders having at least one open end connected to said platform to provide habitat for phytoplankton and habitat provided for marine life supported by phytoplankton and zooplankton is increased.

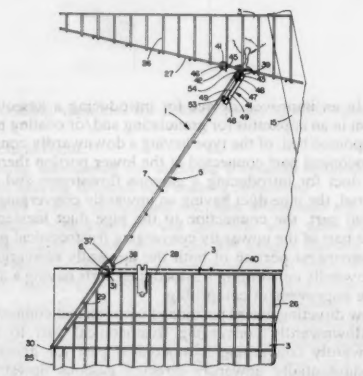


4,335,681

MANURE SHIELD FOR MULTI-TIER POULTRY CAGE CONSTRUCTIONS

Eddie L. Holland, Cumming, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,402
Int. Cl.³ A01K *31/04, 31/06*
U.S. Cl. 119—17 **23 Claims**



1. In a multi-tier cage construction for poultry and the like, having a first tier of cages, and a second tier of cages positioned thereabove; each tier of cages having top, bottom, front and back panels; and said first tier of cages having an exposed area positioned directly below said second tier of cages, wherein said exposed area is defined by front and rear boundaries, the improvement of a manure shield, comprising:

a substantially continuous, rigid support panel having a lower edge thereof connected with a rear edge of the top panel of said first tier cages, said support panel extending upwardly and laterally from said top panel rear edge at an acute angle to a point disposed substantially aligned along a vertical plane with the front boundary of said exposed cage area;

a sheet of flexible, substantially imperforate material positioned over the upper side of said support panel, and extending to the rear boundary of said exposed cage area to prevent manure droppings from entering said first tier cages; and

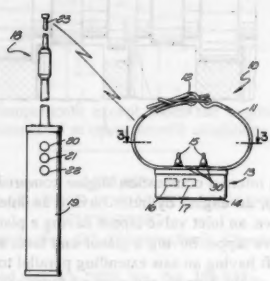
means for mounting said flexible sheet over said support panel, whereby said support panel transmits vibrations from said first tier of cages to said flexible sheet, and manure droppings stuck to said flexible sheet are disjoined therefrom by the vibrations, and in turn slide off of said shield.

4,335,682

ANIMAL TRAINING APPARATUS

Gerald J. Gonda, and John Vancza, Jr., both of Tucson, Ariz., assignors to Tri-Tronics, Inc., Tucson, Ariz.

Filed Mar. 18, 1981, Ser. No. 247,313
Int. Cl.³ A01K *15/00*
U.S. Cl. 119—29 20 Claims



1. An animal training device comprising a unit which is adapted to be worn by an animal and which includes:

electrical stimulation means operable to aversively stimulate the animal;

additional means for producing an additional stimulus in a form other than aversive electrical stimulation and adapted to be sensed by the animal; and

automatic control means operable to automatically actuate said additional means to produce said additional stimulus upon termination of said aversive electrical stimulation, to thereby condition said additional stimulus to the animal's safety, relief and relaxation responses which occur naturally upon termination of the aversive electrical stimulation.

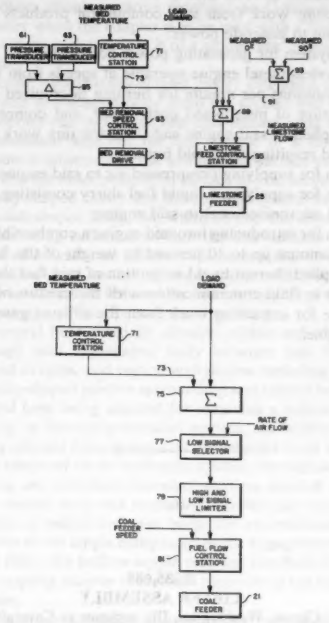
4,335,683

FLUIDIZED BED HEAT EXCHANGER WITH CONTROL TO RESPOND TO CHANGES IN DEMAND

Robert L. Criswell, Florham Park, and Michael C. Polagye, Madison, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 9, 1981, Ser. No. 252,545
Int. Cl.³ F22B *1/02*
U.S. Cl. 122—4 D 6 Claims

1. In a combustion system having means defining a fluidized bed for combusting fuel in said fluidized bed, fuel feeding means to feed fuel into said fluidized bed under the control of a load demand signal representing the heat output required from the system, and second feeding means to feed noncombustible particulate material into said fluidized bed, the improvement comprising means to generate a temperature difference signal corresponding to the difference between a temperature corresponding to said load demand signal and the measured temperature of said fluidized bed, and means to add said temperature difference signal to said load demand signal to provide a composite signal, said fuel feeding means comprising fuel control means to vary the rate of fuel flow into said fluidized bed in accordance with said composite signal, said second feeding means comprising second control means to vary the



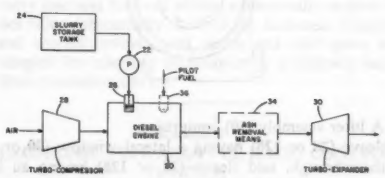
rate of noncombustible paticulate flow into said fluidized bed in accordance with variations in said load demand signal.

4,335,684

MICRONIZED COAL-WATER FUEL SLURRY FOR RECIPROCATING INTERNAL-COMBUSTION ENGINES

Jerry P. Davis, Concord, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Division of Ser. No. 30,573, Apr. 16, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,861
Int. Cl.³ F02B *51/00, 45/10*
U.S. Cl. 123—1 A 6 Claims



1. A method for generating power comprising:

introducing into a valveless diesel engine operable at speeds from 80 to 150 revolutions per minute a liquid fuel slurry consisting of a mixture of water and 20 to 50 percent by weight of coal, in the form of particles having a maximum size not in excess of 20 microns;

introducing into said diesel engine a combustible fluid in an amount up to 10 percent by weight of said fuel slurry supplied thereto to aid in ignition of said fuel slurry;

mixing said fuel slurry and said combustible fluid with compressed air in said engine at conditions of pressure and

temperature such that the coal in said slurry burns to form combustion products and the water in said fuel slurry vaporizes to form steam; and

extracting work from said combustion products and said steam to generate power.

4. A system for generating power comprising:

a valveless diesel engine operable at speeds from 80 to 150 revolutions per minute for burning micronized coal in a mixture of micronized coal, water, and compressed air supplied to said engine and for extracting work from the fluid resulting from said burning;

means for supplying compressed air to said engine;

means for supplying a liquid fuel slurry consisting of water and micronized coal to said engine;

means for introducing into said engine a combustible fluid in an amount up to 10 percent by weight of the fuel slurry supplied thereto to aid in ignition of said fuel slurry; and

means in fluid communication with the exhaust of said engine for extracting work from the exhaust gases of said engine.

4,335,685

LIFTER ASSEMBLY

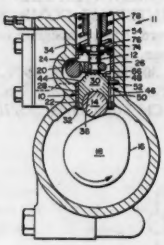
Jerry A. Clouse, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00867, § 371 Date Oct. 19, 1979, § 102(e) Date Oct. 19, 1979

PCT Filed Oct. 19, 1979, Ser. No. 108,906

Int. Cl.³ F01L *1/10*

U.S. Cl. 123—90.5 **12 Claims**



1. A lifter assembly (10) comprising:

a sleeve (28 or 128) having a lateral window (20 or 120) therethrough, said sleeve (28 or 128) having an inner diameter and an inner surface;

a roller holder (30 or 130) fitting within said sleeve (28 or 128) from a first end (32 or 132) thereof, said holder (30 or 130) having a generally semi-cylindrical cavity (36 or 136) therein extending nearly the length of said inner diameter and opening generally at said sleeve first end (32 or 132); and

a roller (14 or 114) having a roller surface of nearly the full length of said cavity (36 or 136) and being rotatably mounted in said cavity (36 or 136) with ends (42, 43 or 142, 143) of said roller (14 or 114) having outfacing surfaces in facing ralation to and adjacent said inner surface of said sleeve (28 or 128).

4,335,686

VALVE CONTROL AND PUMP-ACTUATING MEANS OF INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION

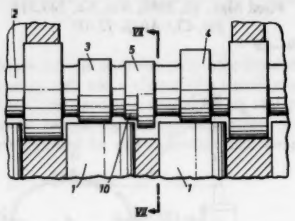
Günther Herdin; Erhard Kauer, both of Steyr; Maximilian Muckenhuber, Behamberg, and Eugen Egger, Steyr, all of Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Dec. 7, 1979, Ser. No. 101,219

Claims priority, application Austria, Dec. 19, 1978, 9057/78

Int. Cl.³ F01L *1/08*

U.S. Cl. 123—90.6 **3 Claims**



1. In an internal combustion engine comprising a fuel injection pump, an engine cylinder having an inlet valve and an outlet valve, an inlet valve tappet having a planar end face, an outlet valve tappet having a planar end face, a

camshaft having an axis extending parallel to the planar end faces of the tappets and a set of three axially fixed, adjacent cams associated with the cylinder, two of the cams engaging the planar end faces of the inlet valve tappet and outlet valve tappet, respectively, and a third one of the cams disposed between and axially spaced from the two cams, the third cam having an end face extending perpendicularly to the axis, and a cam follower cooperating with the third cam and operable thereby to control the fuel injection pump, the improvement of the third cam overlapping the planar end face of one of the two tappets in an axial direction to form an overlapping cam portion and another cam portion axially spaced therefrom and extending between the planar end faces of the two tappets, the overlapping cam portion having a return portion which is radially recessed relative to the other cam portion.

4,335,687

INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama; Haruhiko Iizuka, Yokosuka; Yukihiro Etoh, Yokohama, and Toshiaki Tanaka, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 18, 1980, Ser. No. 160,616

Claims priority, application Japan, Jun. 20, 1979, 54-76889

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—198 F **4 Claims**

1. An internal combustion engine comprising:

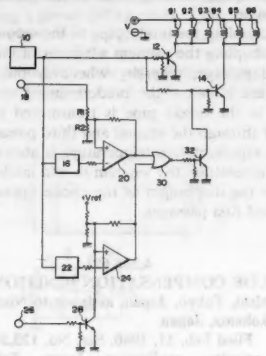
(a) first and second cylinder units each including at least one cylinder;

(b) pulse generator means for generating, in synchronism with engine rotation, a fuel injection pulse signal of pulse width proportional to the rate of air flow to said engine;

(c) first and second fuel supply means responsive to the fuel injection pulse signal for supplying, into said first and second cylinder units, respectively, a controlled amount of fuel corresponding to the duty ratio of the fuel injection pulse signal; and

(d) control means for cutting off the fuel injection pulse

signal to said second fuel supply means when the engine load is below a reference level increasing with an increase



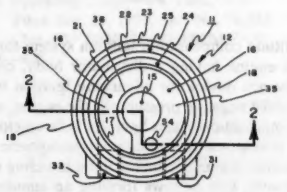
in engine temperature except when the engine speed is below a given level at open throttle conditions.

4,335,688

COUPLING ADAPTER FOR FLUID COOLING AND FILTERING

Paul W. Diederich, Jr., 633 Hunters Trail, Glendora, Calif. 91740

Filed Sep. 12, 1980, Ser. No. 186,433
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—196 A **8 Claims**



1. A coupling adapter for attachment to the fluid reservoir of a hydraulic system for coupling a fluid filter and a remotely located fluid circulation device to the hydraulic system, comprising in combination:

(a) a generally disk-shaped body having first and second spaced-apart end surfaces, the first end surface being adapted for abutment adjacent the outlet surface of the fluid reservoir in place of a fluid filter, the second end surface being adapted for abutment adjacent the end surface of a fluid filter;

(b) a first cylindrically-shaped cavity extending partially into said disk-shaped body from said first end surface;

(c) first, second and third spaced-apart concentric ridges of different diameters formed at the first end surface of said disk-shaped body, said first ridge being adjacent to the outer peripheral surface of said first cavity, said third ridge being adjacent to the outer peripheral surface of said disk-shaped body, said second ridge being located in-between said first and second ridges;

(d) an inner circular groove situated between said first and second concentric ridges and extending partially into said disk-shaped body from the first end surface;

(e) an outer circular groove situated between said second and third concentric ridges and extending partially into said body from the first end surface, one of said inner or outer circular grooves being adapted for receiving a single O-ring for providing a fluid-tight seal between the first end surface of said disk-shaped body and the outlet surface of the fluid reservoir, said inner circular groove receiving an O-ring when the adapter is to be used with a fluid reservoir whose outlet surface is of a first diameter size, said outer circular groove receiving an O-ring of larger diameter when the adapter is to be used with a fluid reservoir whose outlet surface is of a second and larger diameter size;

(f) a second cylindrically-shaped cavity extending partially into said disk-shaped body from the second end surface, the second end surface of said disk-shaped body adapted for abutment adjacent the end surface of a fluid filter includes a substantially flat annular end surface extending between the outer peripheral surface of said second cylindrically-shaped cavity and the outer peripheral surface of said disk-shaped body, the width of said flat annular end surface being sufficient to abut the end surfaces of fluid filters of at least two different diameter sizes;

(g) a central wall section situated within said disk-shaped body between said first and second cavities for preventing the passage of fluid between said cavities;

(h) a central bore coaxially situated within and extending through said disk-shaped body between said first and second cavities, said central wall section including a cylindrically-shaped portion surrounding said central bore, said central bore being adapted for receiving a hollow nipple having an internally-threaded portion, the hollow nipple being adapted for aligning said disk-shaped body with the fluid reservoir of the hydraulic system, the hollow nipple having an externally-threaded portion situated outside said central bore and extending beyond the second end surface of said disk-shaped body, the externally-threaded portion of the nipple being adapted for engagement with a fluid filter, the hollow nipple securing the fluid filter and the coupling adapter to the fluid reservoir of the hydraulic system;

(i) an outlet port extending from the outer peripheral surface of said disk-shaped body and through said body into said first cavity, said outlet port being situated between said first and second spaced-apart end surfaces; and

(j) an inlet port extending from the outer peripheral surface of said disk-shaped body and through said body into said second cavity, said inlet port being spaced apart from said outlet port and being situated between said first and second spaced-apart end surfaces, the distance between the innermost wall portions of the passageways of said outlet and inlet ports at the points of entry into said first and second cylindrically-shaped cavities being greater than the diameter of the cylindrically-shaped portion of said central wall section surrounding said central bore, the distance between the outermost wall portions of the passageways of said outlet and inlet ports at the points of entry into said first and second cylindrically-shaped cavities being substantially equal to the diameters of said first and second cavities, said outlet and inlet ports being adapted for coupling the adapter to a remotely located fluid circulation device.

4,335,689

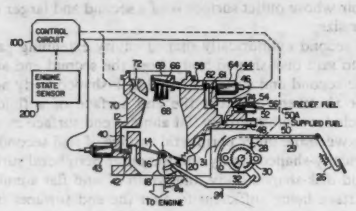
ELECTRONIC TYPE AIR/FUEL RATIO CONTROL SYSTEM

Osame Abe, Katsuta; Seiji Suda, and Toshio Furuhashi, both of Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,054
Claims priority, application Japan, May 9, 1979, 54-55758
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 **10 Claims**

1. An electronic type air/fuel ratio control system comprising an accelerator, means for detecting a manipulation angle of said accelerator, a shunt conduit by-passing a throttle valve, an air by-pass valve disposed in said shunt conduit for controlling flow rate of by-pass air, and a control circuit responsive to an output of said accelerator manipulation angle detecting means to generate a control signal for controlling said air by-pass

valve, and which further comprises means for opening said throttle valve in proportion to the accelerator manipulation angle when said accelerator is operated in excess of a predetermined manipulation angle, and wherein said throttle valve



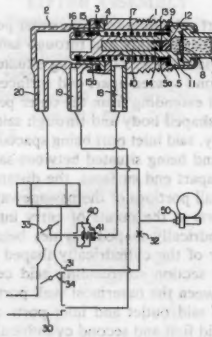
opening means comprises a link mechanism interlocking said throttle valve and said accelerator, and means for inhibiting interlocking of said accelerator with said throttle valve until said accelerator manipulation angle reaches a predetermined value.

4,335,690

TEMPERATURE-DETECTION TYPE CHANGE-OVER VALVE

Hiroyuki Hosokawa, Oobu, and Shiro Maeda, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 28, 1980, Ser. No. 135,150
Claims priority, application Japan, Apr. 3, 1979, 54-40630
Int. Cl.³ G05D *23/12*
U.S. Cl. 123—407 **1 Claim**



1. A temperature responsive valve arrangement for controlling an internal combustion engine having a diaphragm-type choke opener, an intake pipe and a vacuum advance distributor comprising:

a thermally-expandable member adapted to expand as its temperature rises;

a shaft adapted to be pressed and moved in a first direction as the thermally expandable member expands, the thermally expandable member being disposed to sense a temperature representative of the state of the operation of the internal combustion engine;

a valve member rigidly coupled to the shaft and being movable between a first position where it permits a second fluid passage to communicate only with a third passage and a second position where it permits the second passage to communicate only with a first passage;

a tension spring disposed to surround the shaft and being adapted to bias the valve member in a second direction, opposite to the first direction such that when the representative temperature is above the predetermined temperature, the valve member is in the second position, the tension spring being retained at one end thereof by a screwthread like retainer formed around the valve member;

means for coupling the diaphragm of the choke opener to the first passage;

means for coupling the intake pipe to the second passage; and

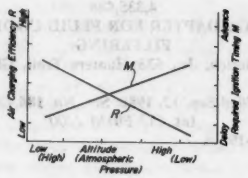
means for coupling the vacuum advancer of the distributor to the third passage, whereby whenever the representative temperature is below the predetermined temperature, the vacuum in the intake pipe is transmitted to the vacuum advancer through the second and third passages and whenever the representative temperature is above the predetermined temperature, the vacuum in said intake pipe is transmitted to the diaphragm of the choke opener through the second and first passages.

4,335,691

ALTITUDE COMPENSATION IGNITION SYSTEM

Hideki Konishi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 11, 1980, Ser. No. 120,308
Claims priority, application Japan, Feb. 13, 1979, 54/15904[U]
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—410 **1 Claim**



1. An altitude compensation ignition system for an internal combustion engine having a distributor body, comprising: a vacuum advance device for advancing ignition timing in response to intake negative pressures of the engine, and pressure sensitive compensation means having a bellows elongating and shortening in response to variation in atmospheric pressure to advance ignition timing depending upon lowering of the atmospheric pressure, said bellows forming an annular elongated cylinder whose ends are fixed to said distributor body and said vacuum advance device respectively, and inner and outer sleeves respectively restraining the inner and outer circumferential surfaces of said bellows so that the same moves in axial direction thereof only.

4,335,692

SPARK IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Nobuo Miura, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,208
Claims priority, application Japan, Nov. 27, 1979, 53-146402
Int. Cl.³ F02P *5/08*
U.S. Cl. 123—418 **10 Claims**

1. An ignition timing control system for use with an internal combustion engine which employs an ignition circuit including a capacitor charged by an exciter coil and a switching element responsive to a trigger signal for discharging the capacitor, the control system comprising

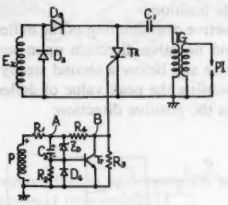
pick-up means for generating an electrical signal synchronized with the speed of an engine, the amplitude of the signal being proportional to the speed of the engine,

rectifier means connected with the pick-up means for rectifying the generated signal,

limit circuit means connected in parallel with the pick-up means for limiting the amplitude of the rectified signal to

a predetermined value representing a predetermined engine speed, and

trigger circuit means connected with the limit circuit means for detecting a preset falling point of the limited rectified signal waveform for generating trigger signals for the switching element of the ignition circuit of the engine to provide substantially constant ignition timing below said predetermined engine speed and to progressively retard



the ignition timing as the engine speed increases above said predetermined engine speed, said trigger circuit means including capacitor means connected in parallel with the pick-up means and including switching means connected between the switching element of the ignition circuit and capacitor means, said capacitor means discharging at a preset falling point of the limited rectified signal waveform from said limit circuit means.

4,335,693

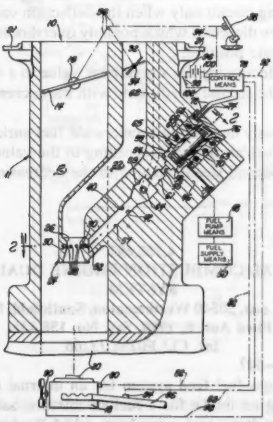
FUEL INJECTION APPARATUS AND SYSTEM

Warren H. Cowles, Bloomfield Hills, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 76,964

Int. Cl.³ F02B *33/00*; F02M *7/00*

U.S. Cl. 123—438 **49 Claims**



1. Fuel metering apparatus for supplying metered rates of fuel flow to a combustion engine, comprising body means, induction passage means formed through said body means for supplying motive fluid to said engine, said induction passage means comprising primary induction passage means and main induction passage means, said main induction passage means comprising first inlet means for permitting the inlet of air and first outlet means for discharging motive fluid to said engine, main throttle valve means for variably controlling the rate of flow of air into said first inlet means and through said main induction passage means, said primary induction passage means comprising second inlet means for permitting the inlet of air and second outlet means for discharging motive fluid to said engine, primary throttle valve means for variably controlling the flow of air through said primary induction passage means, said second outlet means comprising sonic venturi discharge nozzle means situated generally in said main induction passage means downstream of said main throttle valve means, fuel metering means for metering liquid fuel in response to engine demands and indicia of engine operation, metered fuel conduit means communicating between said fuel metering means and said sonic venturi discharge nozzle means, and air bleed means communicating between a source of air and said metered fuel conduit means for bleeding air into such liquid fuel as is metered by said fuel metering means as to cause atomization of said metered liquid fuel for delivery to said discharge nozzle means, said air bleed means being situated with respect to said metered fuel conduit means as to cause said bleed air to have a flow path generally perpendicular to the path of flow of said metered liquid fuel flowing in said metered fuel conduit means thereby causing said bleed air to strike said metered liquid fuel at an attitude generally perpendicular thereto and thereby change said metered liquid fuel to atomized metered fuel, said air bleed means comprising calibrated air passage means, and said calibrated air passage means being effective to flow said bleed air therethrough at sonic flow during normal engine operating conditions.

4,335,694

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

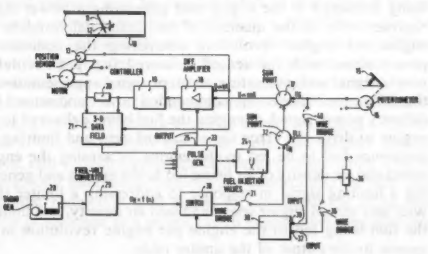
Eberhard Mausner, and Johannes Brettschneider, both of Ludwigsburg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 46,286, Jun. 7, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,274

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837820

Int. Cl.³ F02D *35/00*

U.S. Cl. 123—478 **6 Claims**



1. A fuel control system for an internal combustion engine, said control system including an air induction tube having a linear axis and an accelerator pedal, said control system comprising:

an air flow pressure-responsive element comprising an eccentrically pivotally disposed valve member in said induction tube;

positioning means coupled to said valve member for angularly setting the position of said valve member with respect to the axis of said induction tube;

a control loop for generating a position control signal for said positioning means whereby the position of said valve member with respect to said axis of the air induction tube is adjusted by said control loop on the basis of a signal generated by a position sensor controlled by the position of the accelerator pedal;

processor means for processing said position control signal

generated by said control loop and for generating an air flow rate signal;

a fuel control signal generator for receiving signals from said processor means and for generating fuel control signals on the basis of engine condition signals; and

fuel admission means responsive to signals from said fuel control signal generator for admitting fuel to said engine on the basis of fuel control signals directed to said fuel control signal generator.

4,335,695

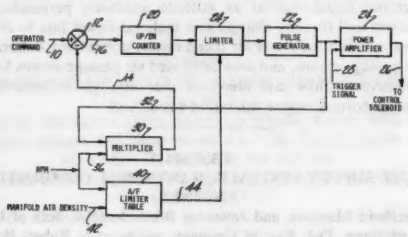
CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Jack R. Phipps, St. Clair Shores, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 80,367, Oct. 1, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,159

Int. Cl.³ F02M *7/18*; F02P *5/04*; F02M *63/02, 69/00*

U.S. Cl. 123—478 **2 Claims**



1. A method of controlling the fuel being delivered to an internal combustion engine in accordance with the operator desired power to be delivered from the engine and improving the operator perceived operation of the engine comprising the steps of generating an operator power command signal in response solely to an operator command, sensing the power being delivered by the engine by sensing the speed and the fuel being delivered to the engine and generating a power signal representative of the quantity of fuel being delivered to the engine per engine revolution, comparing the commanded power signal with the sensed delivered fuel per revolution power signal and generating an error signal representative of the difference between the commanded power and sensed fuel delivery power signal, changing the fuel being delivered to the engine to drive the error signal toward zero and limiting the maximum fuel to be fed to the engine by sensing the engine speed and air density of air being fed to the engine and generating a limiting signal in response to addressing a limiter table with said sensed engine speed and said air density, and limiting the fuel being fed to the engine per engine revolution in response to the output of the limiter table.

4,335,696

METHOD AND APPARATUS FOR PERFORMING FUEL MIXTURE ENRICHMENT

Hans Schnürle, Walheim; Michael Horbelt, Schwieberdingen; Ulrich Drews, Vaihingen-Pulverdingen; Peter Werner, Stuttgart-Neugereut; Otto Glöckler, Renningen; Dieter Günther, Ludwigsburg-Pflugfelden, and Richard Bertsch, Asperg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 866,878, Jan. 4, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,920

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702184

Int. Cl.³ F02M *51/02*

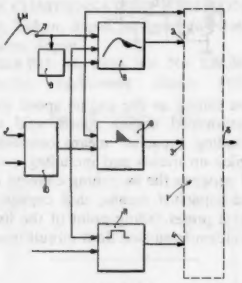
U.S. Cl. 123—492 **21 Claims**

1. A method for enriching the fuel/air mixture delivered to an internal combustion engine having an induction manifold upon acceleration of the engine including an air sensor comprised of a mechanically undamped deflection vane which moves in a positive and negative direction and which generates an electrical air signal related to the air flow rate to the engine, and a fuel metering system; having a storage means, a decreasing means, a smoothing circuit, connected to the engine such that fuel metering to the engine is dependent on the air signal wherein the steps include:

operating the engine such that the deflection vane is in a first steady state position;

allowing effective overshooting of the deflection vane in the positive and negative direction upon acceleration of the engine above and below a second steady state position;

electrically sensing the peak value of deflection vane overshooting in the positive direction;



storing the peak value of deflection vane overshooting in the positive direction in the storage means;

simultaneously causing the fuel metering system to enrich the fuel/air mixture according to the peak value;

subsequent to causing the fuel metering system to enrich the fuel/air mixture, smoothing the air signal with the smoothing circuit only when the deflection vane moves in a negative direction which possibly overshoots the second steady state position;

gradually decreasing the stored peak value to a value representing the second steady state with the decreasing means; and

simultaneously decreasing acceleration fuel enrichment to a normal fuel/air mixture according to the value representing the second steady state with the decreasing means.

4,335,697

INTERNAL COMBUSTION ENGINE DUAL FUEL SYSTEM

Kerry L. McLean, 20540 Westhampton, Southfield, Mich. 48075

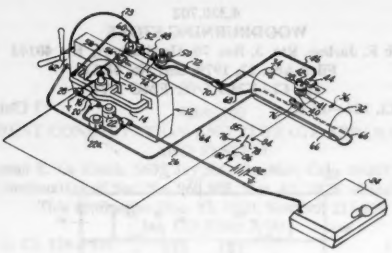
Filed Apr. 8, 1980, Ser. No. 138,434

Int. Cl.³ F02M *13/06*

U.S. Cl. 123—527 **40 Claims**

1. An LP gas fuel feed system for an internal combustion engine having an intake for a fuel-air mixture, said fuel feed system comprising a tank containing said LP gas under pressure in a liquid form, first gas conduit means having an inlet disposed in said tank above the level of said LP gas in a gaseous form, second gas conduit means, pressure regulator means between said first and second gas conduit means for reducing the pressure of said LP gas in a gaseous form during passage from said first gas conduit means to said second gas conduit means, an expansion chamber in said second gas conduit means, gas flow modulation means for modulating the flow of said gas through said second gas conduit means as a function of power requirement of said engine, means at the end of said second conduit means for supplying a mixture of said gas and

of air at the intake of said internal combustion engine, means for heating said tank, said expansion chamber and at least a



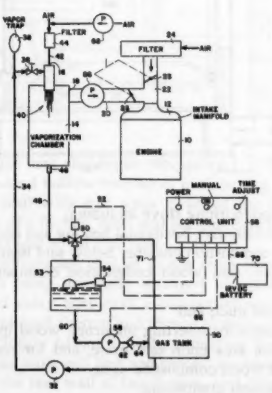
portion of said conduit means, and means for maintaining said tank at a predetermined temperature.

4,335,698

VAPORIZATION CHAMBER

Christopher M. Stephens, Tulsa, Okla., assignor to Max-Mi Corporation, Tulsa, Okla.

Filed Nov. 13, 1979, Ser. No. 93,296
Int. Cl.³ F02M 27/00
U.S. Cl. 123—537 9 Claims



1. For an internal combustion engine having a liquid fuel reservoir and an intake manifold, a generator for converting liquid fuel to a combustible gas, comprising:

a vaporization chamber having an outlet and an inlet, the outlet being connected to the engine intake manifold;

a plurality of small diameter spaced apart independently vibratable tubular reeds extending within said vaporization chamber and communicating with said inlet; and

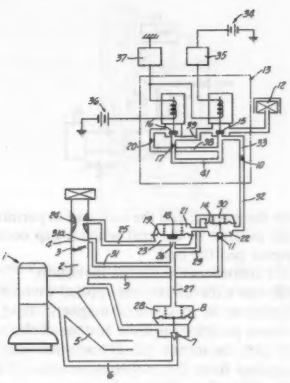
means of introducing liquid fuel from the reservoir and air through a passage located within each of said reeds into said vaporization chamber, the reeds being dimensioned so that they vibrate harmonically by the effect of fuel and air passing therethrough.

4,335,699

EXHAUST GAS RECIRCULATION SYSTEM

Atsushi Totsune, Houya; Yasuhito Itoh, Asaka, and Hitoshi Yamabe, Ohi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 185,300
Claims priority, application Japan, Sep. 10, 1979, 54-115144
Int. Cl.³ F02M 25/06
U.S. Cl. 123—568 7 Claims



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, a throttle valve in the intake passage, and the engine having an exhaust passage for carrying exhaust gases from the engine, the improvement comprising, in combination: a recirculation passageway connecting said exhaust passage to said intake passage downstream from the throttle valve for recirculating exhaust gases into the engine, a first control valve in said passageway, an air conduit connecting said intake passage downstream from said throttle valve to an inlet for atmospheric air, a second control valve in said air conduit, each of said control valves having a vacuum responsive actuator, a regulating valve for controlling vacuum intensity in said actuators, said regulating valve being responsive to differential vacuum pressure between suction pressure in the intake passage and suction pressure in said air conduit upstream from said second control valve, a vacuum pressure modifier device including a restriction in the air conduit upstream from said second control valve, said vacuum pressure modifier device including a valve operatively interposed between the atmospheric air inlet and said first restriction, and means for operating the latter said valve in response to a sensor for an engine operating parameter.

4,335,700

PULSE GENERATOR, PARTICULARLY TO PROVIDE IGNITION PULSES FOR INTERNAL COMBUSTION ENGINES

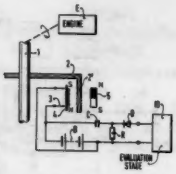
Peter Hauler, Karlsruhe, and Walter Hinke, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,918
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006585
Int. Cl.³ F02P 7/06
U.S. Cl. 123—617 5 Claims

1. Pulse generator to provide electrical pulses in dependence on the position of a movable element, particularly to provide internal combustion engine ignition pulses, in which the movable element is a shaft (1) coupled to the engine, having

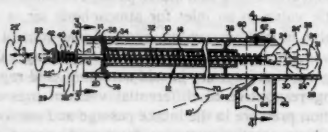
a pick-up coil (3);

A Wiegand wire (4) embedded in, and in magnetically flux-coupled relation to the pick-up coil;
a permanent magnet (5) positioned in flux linking relationship to said coil (3) with the Wiegand wire (4) therein;
and a magnetically permeable masking element (2, 2') formed with gaps therebetween coupled to the movable element and interposed between the coil (3) and said permanent magnet (5) to short-circuit flux from the permanent magnet to the coil when a solid portion thereof is



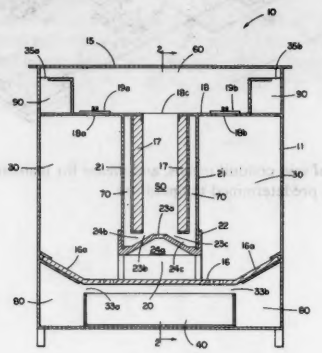
between the magnet and the coil, and to permit flux to pass from the magnet to the coil when a gap occurs between the magnet and the coil,
wherein, in accordance with the invention,
the coil (3) has a direct current applied thereto which is of such direction as to cause a magnetic field in the coil which has a polarity opposite to that of the magnet (5);
and pulse pick-up means (C, D) are provided to furnish output pulses from the coil upon change of direction of magnetization of the Wiegand wire.

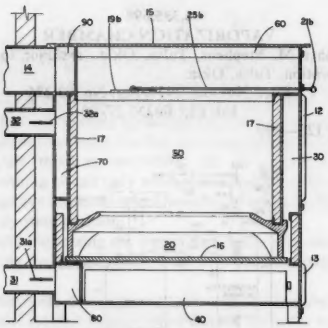
4,335,701
BALL PROJECTING APPARATUS WITH ADJUSTABLE BALL IMPACT MEANS
Stan A. Bozich, 649 SW. Moss, Portland, Oreg. 97219
Filed Mar. 31, 1980, Ser. No. 135,540
Int. Cl.³ F41B 7/00
U.S. Cl. 124—26 **17 Claims**



1. A ball projecting apparatus for projecting a hollow ball into the air along a curved flight path, comprising:
a tubular housing means including a tube having a ball guide portion at one end of said tube where an upper portion of the tube wall has been removed;
a spring biased plunger means including a plunger and a spring, for striking a hollow ball positioned within said guide portion with an impact means on one end of the plunger to impel the ball down said guide portion and cause said ball to be projected out of one end of said housing and into the air along a flight path;
mounting means for mounting said plunger means within said housing, including guide means for guiding the movement of the plunger and the spring within the guide means between a closed end and open end of the guide means so that said one end of the plunger extends through said open end and the other end of the plunger extends through the closed end of the guide means and out of the other end of the housing;
actuation means for actuating said plunger means and including a handle attached to said other end of the plunger means; and
plunger adjustment means for permitting the plunger to move laterally and vary the position of said one end of the plunger means so that the point of impact of said impact means on a ball may be changed so as to cause the flight path of the ball to curve in different directions when it is projected into the air from the housing.

4,335,702
WOODBURNING STOVE
Joseph E. Jarboe, Rte. 3, Box 70, Hardinsburg, Ky. 40143
Filed Aug. 22, 1979, Ser. No. 68,622
Int. Cl.³ F24B 5/00; F24C 1/14
U.S. Cl. 126—15 R **7 Claims**





1. In a woodburning stove including:
(a) a substantially flat, horizontal heating and cooking surface;
(b) a wood combustion chamber below said heating and cooking surface, said wood combustion chamber including a grate;
(c) an exhaust duct; and
(d) door means for inserting unburned wood into said wood combustion area upon said grate, and for removing ashes from said wood combustion area;
the improvement comprising:
(e) a primary air inlet duct leading into said wood combustion chamber below said grate;
(f) a secondary air inlet duct;
(g) a heat transfer chamber having a top portion which is in communication with said heating and cooking surface, said exhaust duct leading from said heat transfer chamber;
(h) a secondary combustion chamber having
(A) an inlet passageway leading from said wood combustion chamber,
(B) a secondary air inlet passageway leading from said secondary air inlet duct, and
(C) an outlet passageway leading to said heat transfer chamber; and
(i) means for providing escape for exhaust fumes through said

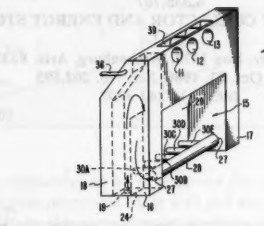
exhaust duct other than through said secondary combustion chamber.

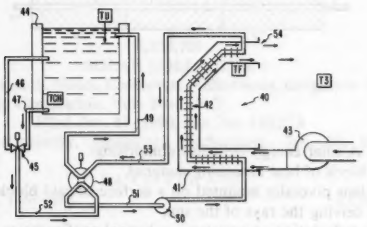
4,335,703

HEAT CONSERVATION AND STORAGE APPARATUS AND SYSTEM

Benno E. O. Klank, 5639 Jay Rd., Boulder, Colo. 80301

Continuation of Ser. No. 968,905, Dec. 13, 1978, abandoned.
This application Dec. 17, 1980, Ser. No. 217,226
Int. Cl.[3] F24B 7/00
U.S. Cl. 126—121 1 Claim





1. A fireplace heat exchanger comprising:

first and second hollow enclosures each having a heat conducting wall with said walls arranged for forming the sidewalls of a firebox, each said enclosure including an air entry port and an air exit port,

means for introducing cool air to said entry ports, each said enclosure being internally arranged for guiding the air from said entry port over a substantial portion of said firebox sidewall thereof and thence to said exit port,

a third enclosure having a heat conducting wall arranged contiguous with said first and second enclosure walls for forming the rear wall of the firebox, said third enclosure including air input means in the lower portion thereof and air exhausting means in the upper portion thereof,

a network of hollow elongated members of heat conducting material for establishing air communication between said first and second enclosure exit ports and said third enclosure air input means with said network being arrayed through the combustion area of the firebox,

an elongated pipe of heat conducting material formed in a path traversing the substantial internal width of said third enclosure,

a plurality of heat conducting fins arranged in heat transfer relation along said pipe, and

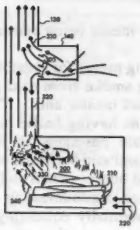
means coupled through the exterior of said third enclosure for passing heat transferring liquid through said pipe.

4,335,704

DRAFT AIR SECONDARY COMBUSTION APPARATUS FOR STOVES

Lincoln Wingstrom, and Ed Wingstrom, both of 107 W. Cedar, Ft. Morgan, Colo. 80701

Filed Sep. 22, 1980, Ser. No. 189,655
Int. Cl.[3] F23L 3/00
U.S. Cl. 126—293 6 Claims



1. An apparatus for directing draft air flowing through a draft flue into a stove pipe, said draft flue being interconnected substantially perpendicular with said stove pipe, said stove pipe being interconnected to a stove for conveying exhaust gases upwardly from said stove, said apparatus comprising:

means for firmly engaging the interior periphery of said draft flue, said engaging means located near said interconnection of said draft flue and said stove pipe;

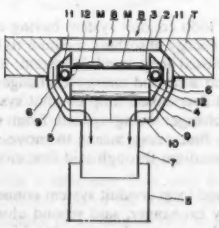
a plurality of vanes connected to said engaging means for directing substantially all of said draft air in an upward direction into said stove pipe, a small amount of said draft air being allowed to flow downwardly into said stove pipe to provide additional oxygen to only an area of secondary combustion of said exhaust gases located in a region of the stove near the entrance to said stove pipe, each of said vanes comprising an elongated horizontal surface, and each of said vanes being further angled upwardly to direct said draft air in said upward direction, said additional oxygen provided to said secondary area of combustion being capable of enabling said secondary area of combustion to substantially combust the creosote vapors in said exhaust gases thereby minimizing the build-up of creosote on the interior of said stove pipe.

4,335,705

SMOKE COLLECTING AND EXHAUSTING SYSTEM FOR A ROASTER

Kurotaki, Kiyomitu, No. 20-8, 1-chome, Jinnan, Shibuya-ku, Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 165,004
Int. Cl.[3] F24C 15/20
U.S. Cl. 126—299 R 6 Claims



1. A roaster for cooking articles comprising:

a roaster having a roaster body and a substantially rectangu-

lar burner means positioned within said roaster body for cooking articles;

a smoke collection and exhaust system having a passage means positioned within the roaster body for collecting smoke from said roaster and a cylindrical exhaust duct means for exhausting smoke from said passage means;

said passage means including two elongated passageways extending along opposite sides of said burner means and extending inwardly underneath said burner means and communicating with one another beneath said burner means;

said exhaust duct means being centrally located underneath said roaster;

a smoke exhausting means for creating a negative pressure in and exhausting smoke from said passage means through said exhaust duct means; and

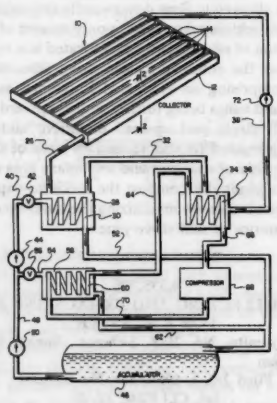
said passage means having baffle means positioned therein for dividing said passageways into substantially equal cross-sections, and said baffle means having ends terminating beneath said burner means and defining a substantially cylindrical space communicating with said exhaust duct means for substantially equalizing the negative pressure along a lateral cross-section of said exhaust duct means adjacent said passage means.

4,335,706

ENERGY COLLECTOR AND TRANSFER APPARATUS

Frank J. Passarelli, 1728 Kelton Ave., Los Angeles, Calif. 90024; George A. Matsukas, 1834 W. Hwy. 154, Santa Ynez, Calif. 93460, and Charles P. Caspary, 21524 Nordhoff St., Chatsworth, Calif. 91311

Filed Sep. 30, 1980, Ser. No. 192,485
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—435 **7 Claims**



1. An energy collector and transferring apparatus comprising:

a first closed loop conduit system having an energy collector, a first energy absorbing medium to be cycled within said first closed loop conduit system, a first energy exchanger and a second energy exchanger being mounted within said first closed loop conduit system, said second energy exchanger being spaced from said first energy exchanger, first pump means to move said first energy absorbing medium through said first closed loop conduit system;

a second closed loop conduit system connected to said second energy exchanger, said second closed loop conduit system cycling a second energy absorbing medium, a third energy exchanger located within said second closed loop conduit system, said third energy exchanger being spaced from said second energy exchanger, compressor means to move said second energy absorbing medium through said second closed loop conduit system; and

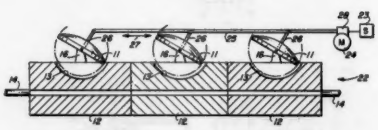
a third closed loop conduit system connected to said first and third energy exchanger, said third closed loop conduit system cycling a third energy absorbing medium, said third closed loop conduit system including an accumulator, valve means controlling the flow of said third energy absorbing medium between both said first energy exchanger and said third energy exchanger, whereby said energy collector is to cause energy to be absorbed within said first energy absorbing medium and then said absorbed energy is transferred either directly to said third energy absorbing medium at said first energy exchanger or indirectly to said third energy absorbing medium through said second energy exchanger.

4,335,707

SOLAR ENERGY COLLECTOR AND ENERGY STORAGE CELL

Leo K. Lindenbauer, Box 1372, Wickenburg, Ariz. 85358

Filed Oct. 31, 1980, Ser. No. 202,595
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **10 Claims**



1. A solar energy collector comprising:

a block of heat absorbing material,

a lens pivotally mounted on a surface of said block for receiving the rays of the sun,

an indentation comprising a spherical configuration formed in said surface of said block juxtapositioned to said lens,

said indentation providing clearance for the lens as it is pivoted about its mounting axis, and

at least one fluid conducting passageway traversing said block for causing the fluid passing therethrough to absorb the heat of said block.

4,335,708

SOLAR COLLECTOR

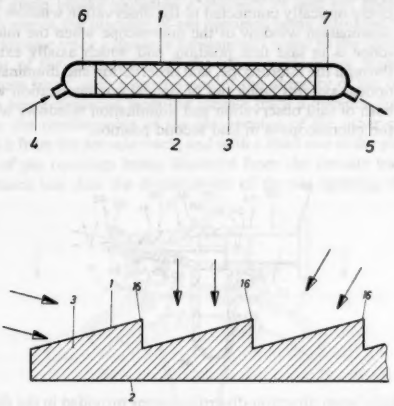
Heinz Hölter, Beisenstrasse 39-41, 4390 Gladbeck; Heinz Gresch, Dortmund-Derne, and Heinrich Igelbüscher, Gladbeck, all of Fed. Rep. of Germany, assignors to Heinz Hölter, Gladbeck, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,382
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818154; Jan. 29, 1979, 2903220
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—442 **15 Claims**

1. Solar collector to absorb solar energy with at least one collector tube with an inlet and an outlet for a heat-transport medium characterized by at least one flat plate-like foil tube, an interlayer which is permeable to the heat-transport medium installed inside walls of the foil tube, the interlayer extending only partially over a width of the flat plate-like foil tube thus forming on both sides of the interlayer channels which respectively are connected to an inlet and an outlet, sides of the interlayer exposed to the walls of the foil tube being reinforced

with webbed texture protective layers, and a wall exposed to solar radiation having a profiled saw-toothed surface.

2. Solar collector to absorb solar energy with at least one collector tube with an inlet and an outlet for a heat-transport



medium characterized by at least one flat plate-like foil tube having a heat permeable outer wall and an interlayer which is permeable to the heat-transport medium installed inside the walls of the foil tube, the wall exposed to the solar radiation consisting of a profiled, particularly a saw-toothed surface.

4,335,709

SOLAR COLLECTOR

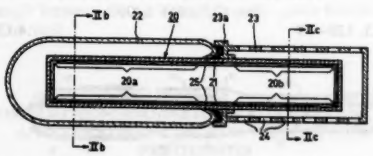
Antonius A. A. Slaats, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,873

Claims priority, application Netherlands, Jan. 26, 1979, 7900621

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—443 **2 Claims**



1. A solar collector, which comprises a sealed metal tube of circular cross-section having an evaporation zone for absorbing heat derived from incident solar radiation and a condensation zone for giving off heat; an evaporable heat transport medium contained in the tube, said heat transport medium during operation being evaporated in the evaporation zone and being condensed in the condensation zone, with return of the resulting condensate to the evaporation zone; an evacuated transparent glass envelope of circular cross-section spaced from and surrounding the evaporation zone, said envelope being joined to the tube between the two zones by means of a glass-metal seal; a metal sleeve of circular cross-section spaced from and surrounding the condensation zone, said sleeve being provided with openings for the passage of a heat-absorbing medium, said sleeve at its end adjacent to the envelope being provided with a cap; and means joining the cap to the envelope to protect the glass-metal seal against damage.

4,335,710

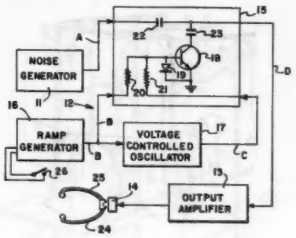
DEVICE FOR THE INDUCTION OF SPECIFIC BRAIN WAVE PATTERNS

John D. Williamson, North Canton, Ohio, assignor to Omnitronics Research Corporation, Akron, Ohio

Filed Jan. 16, 1980, Ser. No. 112,537

Int. Cl.³ A61N *1/34*

U.S. Cl. 128—1 C **11 Claims**



1. A device for the induction of brain wave patterns associated with relaxed and meditative states in a subject comprising:

means for generating a white noise signal having a uniform spectral noise density;

means for receiving said white noise signal and modulating its said spectral noise density in a manner similar to the brain wave patterns associated with relaxed and meditative states; and

means receiving said modulated noise signal for coupling said modulated signal to the subject.

4,335,711

METHOD AND DEVICE FOR SUPPLYING VENOUS PRESSURE IN A PORTAL VEIN

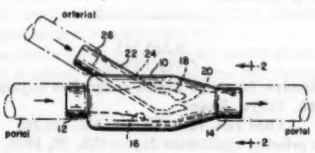
Edward A. Olson, 107 Plymouth Mobile Estates, Plymouth, Mass. 02360

Division of Ser. No. 924,615, Jul. 14, 1978, Pat. No. 4,104,525. This application Nov. 8, 1979, Ser. No. 92,539

The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—1 R **4 Claims**

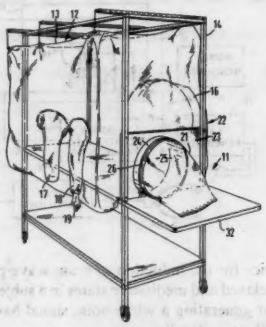


1. A device for increasing the flow of venous blood to the liver comprising an elongate chamber and a tubular part entering the chamber defining an orifice concentric with the chamber and facing in the direction of one end of the chamber, said chamber having end portions designed to be received into the ends of the portal vein from which a section has been removed and tied to provide a substitute flow path for the removed section and the exterior end of the tubular portion being designed to be connected to an arterial vein to conduct arterial blood into the flow path of the venous blood in the portal vein, said chamber and tube being comprised of suitable material compatible with the blood.

4,335,712
ISOLATION ENCLOSURE MEMBERS

Philip C. Trexler, 2 Brook Cottage, Higgs La., Bagshot, Surrey, England

Filed Mar. 13, 1980, Ser. No. 130,053
Claims priority, application United Kingdom, Mar. 26, 1979, 7910495
Int. Cl.³ A61M *16/02*
U.S. Cl. 128—1 R 17 Claims



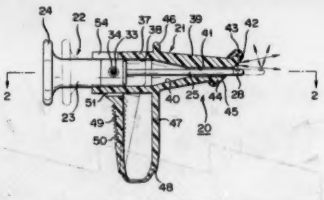
1. An isolator apparatus comprising:
an enclosure member for providing an environment isolated from the anbient environment;
said enclosure member having a transfer port for passage of objects out of the enclosure member;
a flexible disposal bag having one end coupled to the enclosure member around said transfer port;
a closure bag comprising a closed bag having a clean inner surface and containing a backing member in the form of a hoop, said closure bag being positioned within the disposal bag generally transverse to the disposal bag in a position such that the closure bag spans the hoop member to form a double walled barrier across the disposal bag and that part of the closure bag is sandwiched between the hoop member and the disposal bag; and
means for effecting a sealing and cutting operation around the hoop member to cut through the disposal bag and the closure bag and to leave a portion of the closure bag sealed to the disposal bag on each side of the cut with the said clean surface of the closure bag exposed to the ambient environment, the article being sealed in the severed part of the disposal bag by one portion of the closure bag and the remainder of the disposal bag being closed by the other portion of the closure bag after the sealing and cutting operation.

4,335,713
OTOSCOPE

Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,768
Claims priority, application Japan, Feb. 20, 1979, 54/18737
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—9 25 Claims

1. An otoscope which comprises:
a guide tube which has a distal end section and a proximal end, and which is adapted to be inserted into an external auditory meatus;
an elongated microscope which comprises a distal end section having a lateral wall and a proximal end section, and which is reciprocable through the guide tube in the axial direction of the guide tube between a first position at the proximal end of said guide tube whereat the microscope functions as a direct-viewing scope and a second position in said guide tube whereat the microscope functions as a side-viewing scope, the elongated microscope including an observation window and an illumination window disposed in the lateral wall of the distal end section of the microscope;
an observation optical system and an illumination optical system which respectively face and which are respectively optically connected to the observation window and illumination window of the microscope when the microscope is in said first position, and which axially extend through the microscope, said observation and illumination optical systems being out of optical communication with both of said observation and illumination windows when the microscope is in said second position;

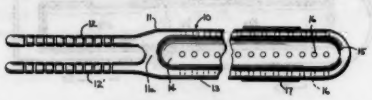


a light beam direction-diverting means provided in the distal end section of the guide tube, and, when made to face the observation window and illumination window, diverts light beams delivered from the illumination optical system axially of the microscope, and diverts light beams coming in the axial direction of the microscope to the observation window; and
a microscope-actuating means provided between the guide tube and the microscope, for reciprocating the microscope relative to the guide tube, and including means for normally elastically urging the microscope from its second position to its first position at the proximal end of the guide tube.

4,335,714
IMPLANT FOR PENILE CONSTRUCTION

Milton T. Edgerton, Charlottesville, Va.; Roberto C. Granato, Elmhurst, N.Y., and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Jul. 17, 1980, Ser. No. 169,751
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 4 Claims



1. An implant for the construction or reconstruction of a penis, said implant consisting of a body member of biocompatible material having an elongated relatively rigid trunk with a urethra receiving groove extending longitudinally down the center thereof, one end of said trunk has a rounded tip and the other end of the trunk is connected by a flexible hinge to a pair of anchoring trimmable stems.

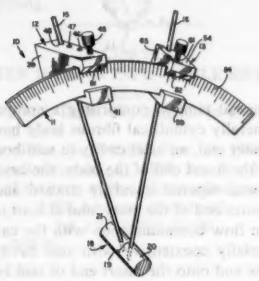
4,335,715
OSTEOTOMY GUIDE

William H. Kirkley, 241 Coventry Rd., Decatur, Ga. 30050

Filed Jun. 20, 1980, Ser. No. 161,553
Int. Cl.³ A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 EB 6 Claims

1. An osteotomy guide comprising an arcuate track of a substantially constant radius, a pair of guide blocks movable along the length of said arcuate track, each of said guide blocks

defining at least one rectilinear pin opening therethrough extending parallel to the radius of said arcuate track for receiving rectilinear pin members therethrough and for holding the pin members parallel to the radius of curvature of said track, one of said guide blocks including a plurality of said pin openings with one of the plurality of pin openings being displaced from the arcuate track a distance substantially equal to the displacement of the pin opening of the other guide block from the arcuate track, with a second one of the plurality of pin openings being displaced from the arcuate track a distance greater than the displacement of the pin opening of the other guide block from the arcuate track, and with a third one of the plurality of pin openings being displaced from the arcuate track a distance less than the displacement of the pin opening of the



other guide block from the arcuate track, connecting means for rigidly holding said guide blocks to said arcuate track, means for rigidly holding a pin in a pin opening of said one of said guide blocks comprising a set screw opening intersecting the plurality of said pin openings of said one guide block and a set screw for extending into said set screw opening, said arcuate track including a scale extending therealong which indicates angles thereabout with respect to the center of its radius of curvature, whereby a first pin is inserted through a bone, a pin opening of one of the guide blocks is inserted about the protruding end of the first pin, and a second pin is inserted through a pin opening of the other guide block and then into the bone at an angle with respect to the first pin which corresponds to the angle between the pin openings of the guide blocks on the arcuate track.

4,335,716

COMPOSITION AND METHOD FOR PREVENTION AND TREATMENT OF DIALYSIS INDUCED PERITONITIS

Robert L. Stephen; Carl Kablitz; Dietz van Dura; Curtis L. Atkin, and Stephen C. Jacobsen, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 11,356, Feb. 12, 1979, Pat. No. 4,235,230. This application Nov. 21, 1980, Ser. No. 208,967

Int. Cl.³ A61J 7/00

U.S. Cl. 128—213 A **4 Claims**

1. A system for preventing or treating dialysis induced peritonitis comprising:

(a) a first container including a first physiological solution therein which is free of protein material and of reducing substances capable of converting I_2 or HIO to I^-;

(b) a second container including a second physiological solution therein having a combined I_2 and HIO concentration in the range of 0.1 to 15 ppm; and

(c) means for serially infusing said first and second solutions from the respective containers into a peritoneal cavity and for draining said solutions from said peritoneal cavity.

4,335,717

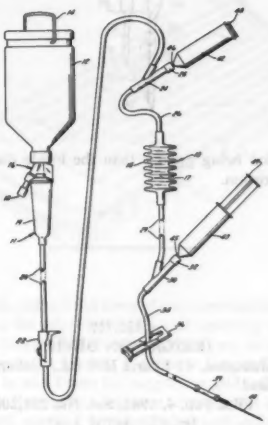
I.V. ADMINISTRATION SET WITH RETROGRADE VOLUME

Albert F. Bujan, Waukegan, and Garfield A. Dawe, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 10, 1980, Ser. No. 195,899

Int. Cl.³ A61M 5/14

U.S. Cl. 128—214 G **10 Claims**



1. A liquid dispensing apparatus for administering a parenteral liquid from a container to a recipient comprising:

a liquid-tight connection means for communicating with said liquid from a container;

a first length of flexible tubing secured to said connection means at one end;

means to control the flow rate of liquid through said first length of flexible tubing;

a sight-drip chamber in fluid communication with said first length of flexible tubing and said connection means;

a first injection site in fluid communication with said first length of flexible tubing at the other end thereof;

a second injection site in fluid communication with said first length of flexible tubing and spaced from said first injection site;

flexible expansion means for accomodating an additional volume of liquid, positioned between said first and second injection sites and in fluid communication therewith;

a second length of flexible tubing in fluid communication with said second injection site; and

means to interconnect a hypodermic needle to said second length of tubing opposite said second injection site.

4,335,718

NEEDLE CANNULA

Frank B. Calabrese, West Caldwell, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

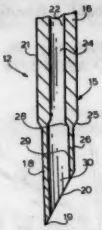
Filed Oct. 2, 1980, Ser. No. 193,055

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 N **8 Claims**

1. A needle cannula for the conveyance of liquid therethrough comprising: an elongate, hollow, substantially cylindrical barrel having a proximal portion and a distal portion terminating in a sharp point for the penetration of skin, said

distal portion having an outside diameter less than the outside diameter of said proximal portion, the inside diameter of said



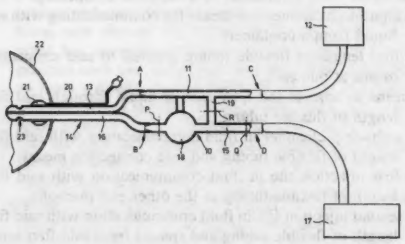
distal portion being greater than the inside diameter of said proximal portion.

4,335,719

IRRIGATION DEVICE

Samuel R. Johnston, 41 Laurel Hill Rd., Lisburn, County Antrim, Ireland

Filed Feb. 4, 1981, Ser. No. 231,200
Int. Cl.³ A61M *3/00*
U.S. Cl. 128—246 **10 Claims**



1. A device for use in the irrigation of a body cavity comprises:

(a) a first passageway having a liquid inlet at one end thereof, which is connectible to a source of irrigation liquid and a liquid outlet at the other end thereof which is connected to or connectible to the inlet passageway of a dual flow flow catheter,

(b) a second passageway having a liquid inlet at one end thereof which is connected to or connectible to the outlet passageway of said dual flow catheter and a liquid outlet at the other end thereof,

(c) an enlarged deformable portion of the second passageway located downstream of said one end of the second passageway,

(d) first flow-controlling means downstream of the enlarged deformable portion to prevent or impede the flow of liquid through the second passageway,

the arrangement being such that when the flow-controlling means are operated to prevent or impede the flow of liquid through the second passageway and the enlarged deformable portion is manipulated to reduce its volume, the flow of liquid in the second passageway upstream of the enlarged deformable portion and in the outlet passageway of the dual flow catheter is reversed.

4,335,720

CATAMENIAL TAMPON WITH HOLLOW CORE

Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139

Filed Apr. 9, 1980, Ser. No. 138,501
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—270 **9 Claims**

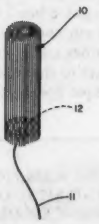
1. A catamenial tampon comprising a compressed, shape-retaining, generally cylindrical fibrous body having an insert end and an outer end, an axial cavity in said body opening at one end onto the insert end of the body, the cavity having it's surrounding wall tapered inwardly toward and terminating short of the outer end of the body, and at least one radial slot in said wall in flow communication with the cavity, said slot being substantially coextensive with said cavity length and opening at one end onto the insert end of said body.

4,335,721

TAMPON CONTAINING FUSIBLE PORTIONS

Billie J. Matthews, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 17, 1981, Ser. No. 234,674
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **8 Claims**



1. A tampon comprising in combination an absorbent matrix of parallelly aligned, closely packed fibers and a withdrawal string a portion of which is fusibly attached near one end of said fibers, said fibers having ends substantially equidistant from said withdrawal string near the points of attachment with said fibers also being transversely rolled to form a jelly roll configured cylindroidal fibrous mass.

4,335,722

WRAPPED SUPERABSORBENT CORE TAMPON

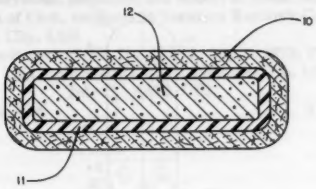
David M. Jackson, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 17, 1981, Ser. No. 235,100
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **5 Claims**

1. A tampon having an absorbent matrix comprising:

(a) a superabsorbent core material;

(b) A nontoxic water soluble coating material at least partially covering said superabsorbent core; and



(c) an outer absorbent layer surrounding said superabsorbent and said coating.

4,335,723

CATHETER HAVING INFLATABLE RETENTION MEANS

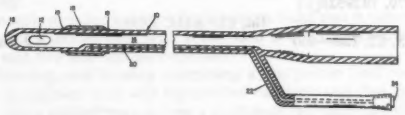
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 745,098, Nov. 26, 1976, abandoned. This application Jul. 31, 1978, Ser. No. 929,948

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 B **18 Claims**



1. A catheter having a shaft at least the outer surface of which consists essentially of a thermoplastic elastomer which is a block polymer including a thermoplastic polystyrene end block and an elastomeric saturated open chain hydrocarbon block, said shaft carrying an inflatable retention means comprising a balloon in the form of a sleeve having a single-layer wall of substantially uniform thickness consisting essentially of a thermoplastic elastomer which is a block polymer including a thermoplastic polystyrene end block and an elastomeric saturated open chain hydrocarbon block, said sleeve fitting closely over said shaft and having its margins bonded circumferentially to the outer surface of said shaft.

4,335,724

SOLARIUM

Hans-Joachim Frei, Erlenbruchweg 1, 6486 Brachttal 3, and Karl Wolf, Ludwigstr. 61, 6450 Hanau 7, both of Fed. Rep. of Germany

Division of Ser. No. 872,386, Jan. 26, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,360

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 7702074[U]; Apr. 9, 1977, 7711270[U]; Nov. 9, 1977, 7734341[U]

Int. Cl.³ A61N *5/06*

U.S. Cl. 128—395 **5 Claims**

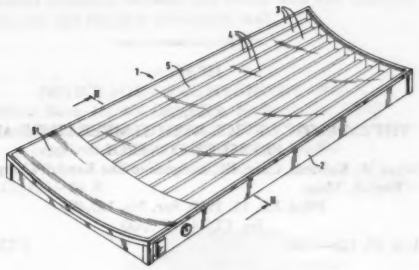
1. Solarium comprising:

a frame having a longitudinal direction, said frame including body means constructed as part of a piece of residential furniture, one side of said frame being open;

a plurality of reflectors being supported adjacent to one another in said frame, said reflectors being open towards said one side of said frame and extending in the longitudinal direction of said frame;

a plurality of ultraviolet fluorescent tubes being mounted in said frame, one of said ultraviolet fluorescent tubes being disposed in each respective one of said reflectors;

means disposed over said one side of said frame for permitting emergence of ultraviolet radiation from said tubes onto a person disposed on said frame, said means including a covering mounted on said frame above said tubes for supporting the person, a major portion of said covering being permeable to ultraviolet rays directed to the person's body, and a head zone of said covering being impermeable to the ultraviolet rays, said covering providing a concave longitudinal trough for receiving the person; and



a support member having a concave longitudinal surface disposed in said frame for supporting said reflectors with said tubes therein in a concave arrangement corresponding to said concave longitudinal trough defined by said covering.

4,335,725

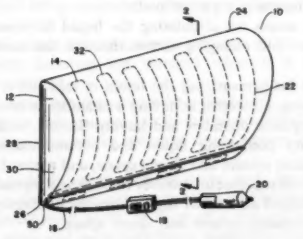
THERAPEUTIC HEAT CUSHION

Barbara J. Geldmacher, Rte. 4, Box 736, Alvin, Tex. 77511

Filed Aug. 15, 1980, Ser. No. 178,511

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—399 **6 Claims**



1. A portable unitary therapeutic heat supplying cushion adapted for use by a person in the seated position, said cushion comprising:

(a) a soft, resilient internal member having a back surface of substantially planar form for contact with the back portion of the seat or chair within which the person sits, said resilient member further having a curved front surface generally conforming to the lower back or lumbar area of the human body,

(b) a pair of panels conforming to the curvature of said front surface of said internal member;

(c) electrical heating means interposed between said pair of panels;

(d) a heat transmissive pad, of less thickness as compared to the thickness of said resilient member, covering the outer one of said pair of panels and conforming to the curvature thereof;

(e) a moisture resistant enclosure enclosing said resilient internal member, panels, electrical heating means and heat transmissive pad;

(f) a protective cover enclosing said moisture resistant closure and the contents thereof said protective cover being removable for cleaning; and

(g) a selectively controllable electrical heating circuit being connectable to a source of electrical energy and being operatively coupled to said electrical heating means.

4,335,726

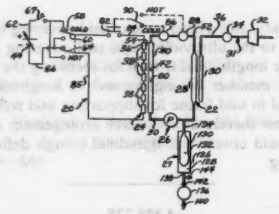
THERAPEUTIC DEVICE WITH TEMPERATURE AND PRESSURE CONTROL

Mark W. Kolstedt, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 11, 1980, Ser. No. 167,493

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—400 **9 Claims**



1. A therapeutic device, comprising:

a sleeve for covering a portion of a patient's body and having flexible walls defining an inner space to receive liquid;

means for changing the temperature of said liquid;

a conduit system connecting the sleeve space and the changing means in a pair of paths;

pump means for circulating the liquid between the sleeve space and changing means through the conduit system; and

means for pressurizing the liquid in said sleeve space comprising, a receptacle having a chamber, a container in the receptacle chamber and having flexible walls defining a cavity containing liquid and communicating with the conduit system and sleeve space, and means for pressurizing the receptacle chamber outside said container to inject a desired amount of liquid from the container cavity into the conduit system and sleeve space.

4,335,727

PACEMAKER ASSEMBLY HAVING VENTRICULAR INHIBITED AND VENTRICULAR TRIGGERED PACEMAKER UNITS

William E. McPherson, P.O. Box 270882, Tampa, Fla. 33688

Filed May 30, 1980, Ser. No. 154,880

Int. Cl.³ A61N *1/36*

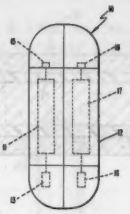
U.S. Cl. 128—419 PG **2 Claims**

1. A pacemaker assembly comprising:

a housing,

a ventricular inhibited pacemaker unit set to produce a signal for application to a patient's heart at a first rate of time,

a ventricular triggered pacemaker unit set to produce a signal for application to a patient's heart at a second rate of time lower than said first rate of time,



the ventricular inhibited and ventricular triggered pacemaker units being contained within said housing and being independently operative with respect to one another.

4,335,728

FASTENER FOR MATERNITY-NURSING BRASSIERE

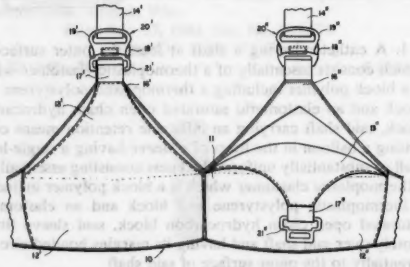
Gerhard Fildan, Dieselstr. 20, D-7250 Leonberg, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,137

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 7929525[U]

Int. Cl.³ A41C *3/04*

U.S. Cl. 128—460 **2 Claims**



1. In a maternity-nursing brassiere having a frame with a pair of cups and supporting means including a pair of shoulder straps linked with said frame via respective fasteners for securing said frame to the body of a wearer, each of said cups having a flap normally attached to one of said fasteners and releasable therefrom to expose the wearer's underlying nipple, the improvement wherein each of said fasteners comprises:

a connector plate of resilient material formed integral with a pair of laterally spaced-apart mounting lugs rising from a generally vertical face thereof and defining a downwardly narrowing gap between them.

a latch member attached to the flap of the respective cup and insertable from below into said gap; and

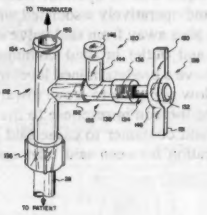
a detent member on said connector plate hinged to said mounting lugs for swinging between a closure position and a release position, said mounting lugs having confronting sides which coact with corresponding flanks of said detent member for elastically biasing same into said closure position, said confronting sides and said flanks contacting each other in said closure position along downwardly converging areas.

4,335,729

APPARATUS AND METHOD FOR SUPPRESSING RESONANCE IN AN ELECTROMANOMETRY SYSTEM

Gordon S. Reynolds, Bountiful, and Robert J. Todd, Salt Lake City, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 62,872, Aug. 1, 1979, Pat. No. 4,269,387. This application Mar. 11, 1980, Ser. No. 129,495
Int. Cl.³ A61B 5/02
U.S. Cl. 128—674 3 Claims



1. In an electromanometry system having a liquid-filled catheter coupled to an electrical pressure transducer for monitoring hemodynamic pressures, a variable restriction apparatus comprising a valve for hydraulically matching the characteristic impedance of the electromanometry system for purposes of controlling the system's resonance characteristics and thereby improving the system's frequency response, said valve comprising:

a needle member having a first elongated end that is tapered and a second end, with a threaded portion intermediate said first and second ends; and

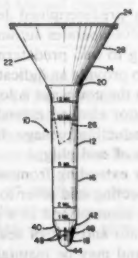
a housing, said housing comprising a first port in fluid communication with said liquid-filled catheter, said first port being molded onto at least a portion of said tapered end, a collar molded onto the threaded portion of said needle member, and a second port in fluid communication with said first port, said second port being molded so that it is adjacent to at least a portion of said tapered end and being capped so as to provide a compliant air cavity.

4,335,730

COLLECTOR ASSEMBLY AND SPECIMEN TUBE THEREFOR

Gladys B. Griffin, 848 S. Johnson Ct., Lakewood, Colo. 80226

Filed Aug. 30, 1979, Ser. No. 71,235
Int. Cl.³ A61B 10/00
U.S. Cl. 128—760 16 Claims



1. A specimen collector tube unit adaptable for collecting urine specimens therein comprising:

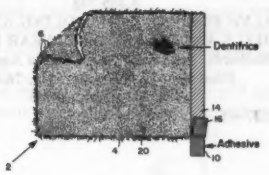
an elongated tubular member having an open end, a closed end opposite said open end, a surrounding sidewall portion between said open end and said closed end terminating in a rounded convergent end wall adjacent to said closed end, and a reservoir tip at said closed end defining an axial extension of said end wall and being of substantially the same wall thickness as said surrounding sidewall portion, the degree of convergency of said rounded convergent end wall into said reservoir tip being sufficient to prevent the release of that portion of a urine specimen contained in said reservoir tip when said elongated tubular member is inverted to pour out the urine specimen from said elongated tubular member and external reinforcing means extending between and united with said reservoir tip and said rounded convergent wall.

4,335,731

DEVICE FOR ORAL HYGIENE CARE

F. William Bora, Jr., 404 Gulph Rd., Narberth, Pa. 19072

Continuation of Ser. No. 927,869, Jul. 25, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 156,930
Int. Cl.³ A45D 44/18
U.S. Cl. 132—84 R 5 Claims



1. A disposable dental wipe for dental hygiene adapted to be wrapped around a finger for better sensitivity and pressure control against the teeth and gums, comprising

a flexible honeycombed flat sheet of soft foam material having outer and inner faces and formed of a flexible resilient material,

bristles integral with said material and extending outwardly from the outer face of said sheet,

said bristles extending from all over the outer face of said sheet,

said material being polyurethane or a polymeric-like material,

a stripe of contact adhesive means mounted on the sheet for adhesively securing the material when it is wrapped around a finger,

said sheet being impregnated with a dentifrice,

said dentifrice being adapted to flow through the sheet upon application of pressure with the finger against teeth and gums,

whereby said disposable dental wipe may be wrapped around a finger and may be directed and pressed by the finger in-between teeth, in back of a row of teeth, and against gums and teeth with finger sensitivity to provide a positive wiping force but tend to prevent the use of too great a force that would cause tooth enamel and gum deterioration.

4,335,732

HAIR CURLING IRON

Salvatore Megna, 3721 Fair Oaks Blvd., Sacramento, Calif. 95825

Filed Jan. 26, 1981, Ser. No. 228,573
Int. Cl.² A45D 24/10
U.S. Cl. 132—123 20 Claims

1. A curling iron comprising:

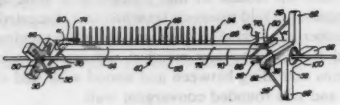
a handle;

a generally tubular body having a radial side wall with a plurality of wall openings, said body being attached at one end to said handle;

a plurality of brushes extending longitudinally within said

body, said brushes having bristles secured thereto and extending in a generally radially outward direction;

at least one selectively operable member disposed within said body for reciprocating longitudinal movement; and



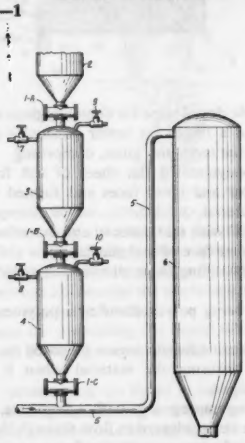
conversion means coacting with said member for converting the reciprocating longitudinal movement of said member into generally radially reciprocating movement of said bristles through said wall openings, whereby the longitudinal movement of the member results in retraction or extension of the brushes.

4,335,733

VALVE FOR USE IN HANDLING ABRASIVE MATERIALS AND METHOD OF WEAR PREVENTION

John A. Richards, 1611 Sierra Alta, Santa Ana, Calif. 92705

Filed Sep. 17, 1979, Ser. No. 76,452
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—1 **27 Claims**



23. The method of preventing wear on the seating surfaces of a valve having a closed casing containing inlet and outlet chambers, and having valve plate means engaged with said seating surfaces for controlling flow between said chambers, comprising: applying loading pressure to maintain the valve plate means and seating surfaces in sealing contact; introducing fluid under pressure into the valve casing in surrounding relation to the valve plate means to pressurize the interior of said casing; and maintaining said loading and said casing pressure while material is flowing through the valve in such relation as to prevent abrasive material from getting between said seating surfaces and said valve plate means and into said casing.

4,335,734

FLOAT WARNING DEVICE

Joseph C. Trinkwalder, North Tonawanda, N.Y., assignor to Sherwood-Selpac Corp., Lockport, N.Y.

Filed Feb. 26, 1979, Ser. No. 14,932
Int. Cl.³ F16K *17/40, 31/18, 33/00*
U.S. Cl. 137—77 **22 Claims**

1. A valve adapted for connection to a container holding an evaporative liquid for controlling the flow of gas from an outlet of the container spaced from the liquid to allow flow of gas therethrough, said valve comprising:

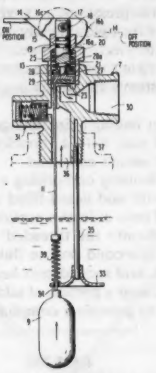
(a) a valve casing having an inlet adapted to be connected to said container outlet and having an outlet;

(b) a valve seat arranged between said inlet and outlet;

(c) a plug adapted to be received on said valve seat;

(d) a gas conducting passage between said inlet and said valve seat;

(e) sensor means adapted to sense the level of said liquid, said sensor means comprising a float operatively associated with said liquid and an operator element extending from said float and operatively associated with said plug so as to space said plug away from said valve seat thereby placing said inlet and outlet in fluid communication when said liquid is above a predetermined level in said container and so as to allow said plug to move toward said valve seat to be received thereon in response to the level of said liquid falling in said container to cause said plug to block fluid communication between said inlet and outlet when said



liquid falls to a predetermined level in said container whereby said valve operates automatically in response to said liquid falling to said predetermined level to shut off the flow of gas to provide an indication to the user that the level of liquid in the container is low and must be replenished, said operator element extending through said inlet and said gas conducting passage during the opening and closing positions of said plug;

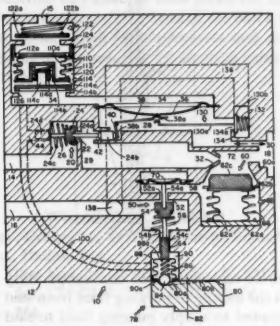
(f) a movable lever extending from said valve casing; and

(g) means for connecting said lever to said plug independent of said operator element and in a manner such that said plug is moved into and out of seating engagement with said valve seat and may be maintained in or out of such seating engagement in response to movement of said lever independent of operation of said sensor means, said valve remaining operative when said plug is moved and maintained out of seating engagement with said valve seat thereby allowing the user to release a reserve quantity of gas from said container by moving said lever independent of said automatic operation.

4,335,735
AUTOMATIC DILUTER/DEMAND OXYGEN REGULATOR ADAPTED FOR CHEMICAL OR BIOLOGICAL USE

Robert L. Cramer, Davenport, Iowa, and Roy L. Henneberger, Madison, Wis., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 22, 1980, Ser. No. 189,462
Int. Cl.³ A61M *15/00*
U.S. Cl. 137—81.1 **7 Claims**



1. An oxygen regulator having a body and comprising in said body:

a first inlet port for pressurized oxygen;

a second inlet port for pressurized diluter gas;

an outlet means adapted to be connected to breathing apparatus;

a first chamber;

a second chamber;

a first balanced valve means responsive to differential gas pressure between said second chamber and said outlet means for regulating the rate of flow of oxygen from said first inlet port to said outlet means via said first chamber;

flow means located between said first chamber and said outlet means for reducing the gas pressure of oxygen flowing therethrough;

a third chamber;

a second balanced valve means located between said second inlet port and said third chamber and responsive to the differential gas pressure between said first and third chambers for regulating the restrictions of said second balanced valve means; and,

means responsive to ambient gas pressure for regulating the gas pressure in said second chamber and the communication between said third chamber and said outlet means.

4,335,736
DOUBLE PIPING TYPE HYDRAULIC PRESSURE CONTROL DEVICE

Toshifumi Maehara, Hanzono, and Tomohiro Fujita, Hanyu, both of Japan, assignors to Akebono Brake Industry Company Limited, Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,723
Claims priority, application Japan, Jul. 31, 1979, 54-97572; Sep. 18, 1979, 54-119545; Dec. 17, 1979, 54-163945; Dec. 17, 1979, 54-163946
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—87 **9 Claims**

1. A double piping type hydraulic control device comprising:

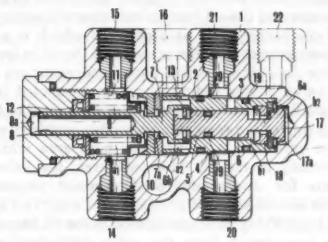
means for forming a valve body having an axially extending passage therein with said axially extending passage including a first hydraulic pressure channel followed in the axial direction by a second hydraulic pressure channel, each of said first and second hydraulic pressure channels is divided into an input chamber and an output chamber;

an axially extending control piston located within said first hydraulic pressure channel and arranged to receive hydraulic pressure therein;

a first valve mechanism located within said first hydraulic pressure channel and performing pressure reducing control on the output hydraulic pressure of said output chamber of said first hydraulic pressure channel, said first valve mechanism including said control piston, a first valve seat (**10**) located within said first hydraulic pressure channel and located between said input chamber and said output chamber, and a control spring (**9**) biasing said control piston toward said second hydraulic pressure channel;

a balance piston located within said second hydraulic pressure channel and arranged to be exposed to the pressure within said output chambers of said first and second hydraulic pressure channels, said balance piston being axially displaceable said device including a stopping means for interconnecting the adjacent ends of said control piston and said balance piston, said stopping means arranged to limit to a predetermined extent the relative movement of said control piston and said balance piston away from one another; and

a second valve mechanism located within said second hydraulic pressure channel, an inlet port in said valve body



opening into said input chamber in said second hydraulic pressure channel, an outlet port in said valve body opening into said output chamber in said second hydraulic pressure channel, said second valve mechanism including said balance piston is arranged to selectively block communication between said input port and said output port of said second hydraulic pressure channel, said second valve mechanism includes

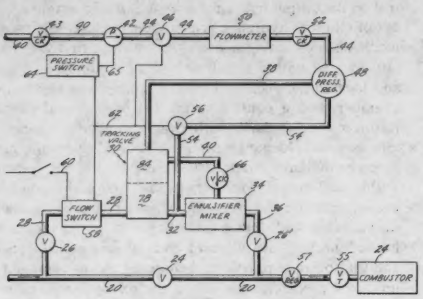
a second valve seat member located within said second hydraulic pressure channel between said input and output chambers therein, and

said balance piston includes a valve body part formed integrally with said balance piston and located within said output chamber of said second hydraulic pressure channel, said valve body part arranged to block communication between said input port and said output port by moving into engagement with said second valve seat member (**18**), said balance piston having a pressure receiving area at one end thereof exposed to the pressure within said output chamber of said first hydraulic pressure channel, said balance piston having another pressure receiving area on the opposite end thereof equal to said pressure receiving area on the one end of said balance piston and exposed to the pressure in said output chamber of said second hydraulic pressure channel when said second valve seat member and said valve body part are in engagement with one another.

4,335,737
PROPORTIONING AND MIXING IMMISCIBLE LIQUIDS

Harold H. Power, 65 Five Field Rd., Madison, Conn. 06443

Filed Dec. 15, 1980, Ser. No. 216,770
Int. Cl.³ G05D 11/13
U.S. Cl. 137—98 8 Claims



7. Apparatus for mixing a constant proportion of water into an oil stream within a line, wherein the oil stream varies in flow rate and pressure comprising

(a) a supply of water at a pressure greater than the pressure of oil in the line;

(b) a differential pressure regulator connected to the supply of water and the oil line, to modulate the water pressure and discharge water at a pressure which is a constant amount greater than the pressure of the oil in the line just before the point at which the oil and water are mixed;

(c) a valve having a first chamber connected to the oil stream line and a second chamber connected to the water discharge of the regulator, moveable members within the valve providing a water flow path area which varies according to the oil flow path area, the valve having points for discharging predetermined proportions of water and oil separately;

(d) an emulsifying mixer connected in the oil line and water line downstream from the valve discharge points, for combining and dispersing the water within the oil;

(e) means for preventing flow of oil into the water conveying parts of the apparatus, to prevent fouling of the valve and other components when the water pressure in portions of the apparatus is less than the oil stream pressure; and

(f) means for isolating the differential pressure regulator from the water supply and the oil line, to prevent damage to the regulator when low oil flow or low water pressure is encountered.

4,335,738
BUTTERFLY VALVE

Nicholas Nassir, 616 N. Hidalgo Ave., Alhambra, Calif. 91801

Filed Jun. 19, 1979, Ser. No. 50,103
Int. Cl.³ F16K 1/226
U.S. Cl. 137—246.22 12 Claims

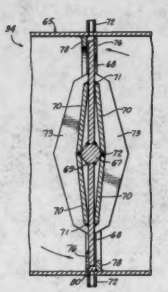
1. A butterfly valve for use in controlling the flow of high-temperature high-pressure particulate laden fluid comprising:

a cylindrical valve body having a pair of substantially semi-annular seats secured to and extending inwardly from the interior thereof and disposed on the opposite sides of the axis of aligned bearings located diametrically of said valve body;

a valve shaft mounted in said bearings and extending cross-wise of said valve body;

a valve disc mounted on said shaft having the diagonally opposed semi-annular rigid non flexible rim portions thereof on the opposite sides of said shaft recessed and cooperating with said semi-annular seats and with the adjacent interior surface of said valve body to form a purging fluid distributing chamber when said valve disc is closed against said semi-annular seats;

said semi-annular seats extending inwardly substantially beyond the radial depth of said semi-annular recesses and the rigid periphery of said valve disc being closely spaced from the interior surface of said valve body in the closed



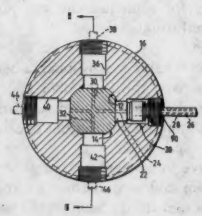
position of said valve disc and cooperating therewith to restrict the escape of purging fluid from said recesses; and

means adapted to supply purging fluid to said semi-annular recesses pressurized to a pressure in excess of the fluid pressure prevailing in said valve body when said valve disc is closed thereby to prevent leakage of particulate-laden fluid therepast.

4,335,739
SLIDER VALVES

Robert E. Fields, 51 Norfolk St., Cambridge, England

Filed Jan. 28, 1980, Ser. No. 116,111
Claims priority, application United Kingdom, Jan. 29, 1979, 7903090
Int. Cl.³ F16K 11/06, 1/42
U.S. Cl. 137—269 8 Claims



1. A slider valve comprising:

(1) a body,

(2) a bore of generally circular cross-section through the body,

(3) a block slidable in the bore, the cross-section of the block being generally square but with the corners rounded so as to conform to the radius of the bore and allow the block to just fit within the core,

(4) at least one pair of diametrically opposed ports formed in the body so as to extend perpendicularly to the axis of the bore,

(5) pipe connections in the body communicating with the said ports,

(6) pads of resiliently deformable plastics material slidable in the ports and having flat inner end faces adapted to abut and sealingly engage the flat side faces of the block,

(7) a fluid passage through each pad,

(8) at least one fluid passage through the block which upon

appropriate axial movement of the block within the body can be aligned with fluid passages through two of the pads, and

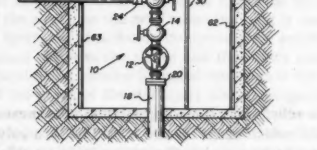
(9) means for exerting thrust on the outer end faces of the pads to effect sealing engagement with the block faces, the size of the cross-section of the pads being such that substantially the whole of the external surface of the block is supported by a bounding surface formed on the one hand by the inner wall of the bore and on the other hand by the inner end faces of the pads, thereby to reduce the possibility of distortion and material flow when the thrust on the pads acting on opposite side faces of the block is increased to accommodate high fluid pressures and maintain the sealing engagement between the abutting faces of the pads and the block.

4,335,740

WELLHEAD BUNKER

Jack W. Boley, Grapevine, Tex., assignor to Texas Oil and Gas Corporation, Dallas, Tex.

Filed Nov. 26, 1979, Ser. No. 97,171
Int. Cl.³ F16L *5/00;* E02D *29/14*
U.S. Cl. 137—364 **3 Claims**



1. Protective apparatus for use in delivery of oil and/or gas from a well through production tubing to a distribution system in a heavily trafficked environment, comprising:

a reinforced concrete bunker having a single chamber and an open top and substantially submerged in the earth in a position to surround the production tubing at near the upper end thereof;

a wellhead attached to the production tubing in a position to be completely enclosed within said bunker;

a top support structure attached to the inner walls of said concrete bunker at a position displaced from the top thereof;

a cover dimensioned to fit within the top of said concrete bunker and supported on said support structure at a position above said wellhead;

first and second access openings positioned substantially diametrically opposite to each other in said cover to each provide for both entry into the single chamber of said concrete bunker and through ventilation;

first and second ladders, one for each of said access openings attached to an inner wall of the chamber of said concrete bunker in a location such that the upper end of said ladder terminates in the vicinity of an access opening;

first and second hatch doors one for each of said access openings to close off said access openings; and

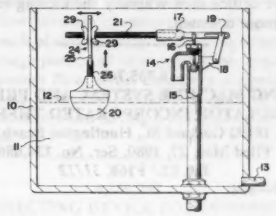
a sump line attached to the inner wall of said concrete bunker and having one open end terminating at near the bottom of said bunker and a second open end extending from said bunker at a position above ground level.

4,335,741

FLUID LEVEL CONTROLLER

Karim W. Nasser, 204 Garrison Crescent, Saskatoon, Saskatchewan, Canada

Filed Feb. 11, 1981, Ser. No. 233,513
Int. Cl.³ F16K *31/22, 31/26*
U.S. Cl. 137—426 **4 Claims**



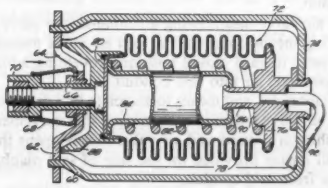
1. A fluid level control device operatively connectable to a source of fluid and adapted to operate a valve to open and close the source of fluid; comprising in combination a rod operatively connected by adjacent one end thereof to the valve, a float element, a connector element detachably securing said float element to said rod along the length thereof, and detachable clamping means cooperating between said rod and said connector element for adjusting the position of said connector element along the length of said rod and also adjusting said connector element perpendicularly with relation to the longitudinal axis of said rod, said connector element including an elongated member, means to mount said elongated member for said movement perpendicular to the axis of said rod, said means to mount said elongated member including a slot formed through said elongated member parallel to the longitudinal axis thereof thereby mounting said member upon said rod for said movement perpendicular to the longitudinal axis of said rod.

4,335,742

EVAPORATOR PRESSURE REGULATOR

Henry Jacyno, Franklin, Wis., assignor to The Singer Company, Schiller Park, Ill.

Division of Ser. No. 654,465, Feb. 2, 1976, Pat. No. 4,024,888, which is a continuation of Ser. No. 519,853, Nov. 1, 1974, abandoned. This application Jan. 24, 1977, Ser. No. 761,679
Int. Cl.³ F25B *41/04;* F16K *31/12*
U.S. Cl. 137—494 **2 Claims**



1. A pressure regulating valve including

a housing having an inlet and an outlet,

a valve seat in the housing between the inlet and the outlet and having an orifice inside the seat,

a poppet valve located on the outlet side of the seat with its face exposed to the inlet pressure and cooperating with the seat to regulate flow,

a sealed bellows located on the outlet side of the seat and having one end fixed relative to the seat and its other end connected to said valve,

means in said bellows holding the valve on the seat until the force of the inlet pressure acting on the valve face exceeds the force of said means,

said means including a charge the pressure of which is affected by temperature,

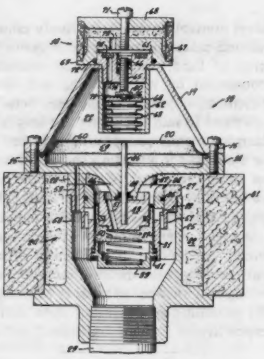
the mean effective area of the bellows being greater than the effective area of the valve orifice so reduced temperature and pressure outside the bellows has a reduced effect on force exerted by the bellows and said means on the valve in the closing direction than would be the case if the mean effective area of the bellows were equal to or less than the effective orifice area whereby the closing force is maintained more constant.

4,335,743

MILKING MACHINE SYSTEM, AND PRESSURE REGULATOR INCORPORATED THEREIN

Leon Jones, 18192 Gothard St., Huntington Beach, Calif. 92648

Filed Mar. 27, 1980, Ser. No. 134,686
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—494 **11 Claims**



1. A pressure regulator for Tee connection in the line which extends between the vacuum pump and the milking machine of a milking machine system, said pressure regulator comprising:

(a) a conduit adapted to be connected in said line in Tee relationship,

(b) air valve means one side of which communicates with the ambient atmosphere and the other side of which communicates with said conduit, whereby said air valve means admits, when in open condition, atmospheric air into said conduit,

said air valve means being a rolling-sleeve valve,

(c) spring means connected to said air valve means to urge the same toward closed position preventing admission of atmospheric air into said conduit,

(d) a diaphragm, and means to associate said diaphragm with said air valve means in such manner that movement of said diaphragm toward said air valve means opens the latter;

(e) wall means provided on the side of said diaphragm remote from said conduit,

said wall means defining a dome chamber,

(f) means to admit atmospheric air into said dome chamber and to maintain the pressure in said dome chamber at a predetermined substantially constant level below that of the ambient atmosphere,

(g) means to effect communication between said line and the side of said diaphragm adjacent said conduit, and

(h) means to maintain the air pressure on said adjacent side of said diaphragm at a predetermined substantially constant pressure differential below that in said dome chamber,

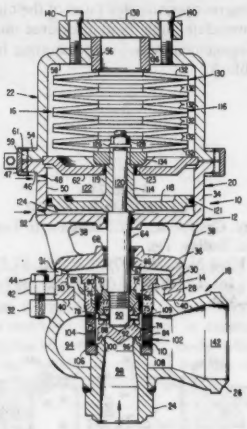
whereby there is no leakage in said valve through said air valve means yet the pressure in said line is caused to be substantially constant at a level which is related to the pressure in said dome chamber.

4,335,744

QUIET SAFETY RELIEF VALVE

Roger Bey, Illzach, France, assignor to Control Components, Inc., Irvine, Calif.

Filed Apr. 7, 1980, Ser. No. 137,660
Int. Cl.³ F16K *31/122, 15/00*
U.S. Cl. 137—522 **9 Claims**



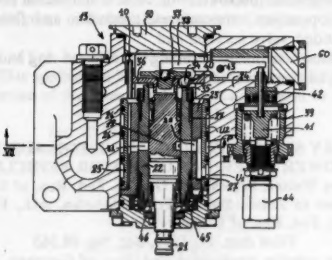
1. In a relief valve including a body, inlet means formed in said body, outlet means formed in said body, a valve assembly between said inlet and outlet means and movable between a closed position and an open position, means for moving said valve assembly between the closed and open position, and means biasing said valve assembly to its closed position; the improvement wherein said means biasing said valve assembly comprises the combination of spring means acting between said body and said valve assembly, first fluid pressure means acting on said valve assembly, the net biasing force acting on the valve being the spring force plus the first fluid pressure force, wherein said means for moving said valve assembly includes second fluid pressure means acting on said valve assembly to move said valve assembly to its open position, wherein said valve assembly comprises a valve stem received for axial sliding movement in said body, and a sealing element attached to an end of said valve stem, including a piston element attached to said valve stem, wherein said body comprises a lower section, an intermediate section attached to said lower section, and an upper section attached to said intermediate section, a portion of said intermediate section defining a cylinder in which said piston element is received, including a wall member received between said intermediate section and said upper section and substantially closing one end of said cylinder, a first fluid inlet port formed in said intermediate section and opening into said cylinder on a first side of said piston element, and a second fluid inlet port formed in said intermediate section and opening into said cylinder on a second side of said piston element; and, wherein said piston element comprises a hub portion received on said valve stem and extending through said wall member, and a disk portion including peripheral sealing means acting against the interior wall of said cylinder.

4,335,745

HYDRAULIC DISTRIBUTOR, ESPECIALLY FOR SERVO-CONTROL SYSTEMS OF AIRCRAFT AND HELICOPTERS

Marcel Bouveret, Bagneux, and Gerard Devaud, Paris, both of France, assignors to S.A.M.M.-Societe d'Applications des Machines Motrices, Issy-les-Moulineaux, France

Filed Jun. 26, 1980, Ser. No. 163,382
Claims priority, application France, Jul. 3, 1979, 79 17184
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—554 7 Claims



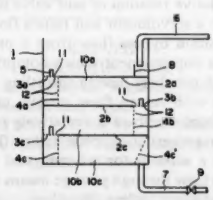
1. A hydraulic distributor primarily intended to equip servo-control systems of aircraft and helicopters, comprising a plug rotatably mounted within a stationary sleeve housed within a casing and pierced by bores for admission of a hydraulic fluid under pressure and discharge of the fluid to the collector-tank, progressively-opening passages on the periphery of the rotary plug in order to ensure circulation of the hydraulic fluid from one bore of the sleeve to the next when the plug is caused to rotate, said hydraulic distributor comprising an annular element interposed between the sleeve and the rotary plug, said annular element being pierced by radial openings in the line of extension of the bores of the stationary sleeve, progressively-opening passages in the outer periphery of said annular element so as to permit progressive transfer of the hydraulic fluid from one bore of the stationary sleeve to the adjacent bore if said annular element is caused to rotate, and locking means for maintaining the annular element in a normally stationary position at the time of rotation of the plug and for permitting rotational displacement of the annular element by the plug in the event of seizure of this latter within said annular element in order that the circulation of the hydraulic fluid may then be permitted to circulate from one bore to another through the peripheral passages of said annular element.

4,335,746

LIQUID STORAGE TANK

Akimitsu Miyahara, Tokyo; Toshihiko Kanazawa, Sagamihara; Kokaji Takahashi, Fujisawa; Hiroji Ushikubo, Ageo, and Kuniaki Kawano, Matsudo, all of Japan, assignors to Japan Organo Company, Ltd., Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,302
Int. Cl.³ E03B *11/00*
U.S. Cl. 137—576 5 Claims



1. In a liquid storage tank having a multiplicity of stages of horizontal partition plates which divide the space in said tank into a plurality of storage chambers, said partition plates having openings for allowing a liquid to flow down therethrough from the overlying chamber to the underlying chamber, said openings being arranged in a staggered manner such that the opening of the overlying partition plate is formed at one end of said tank while the opening of the underlying partition plate is formed at the other end of said tank;

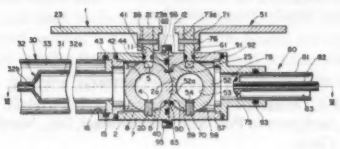
an improvement which comprises means for generating laminar flow between chambers comprising a plate provided at each of said openings and having a multiplicity of liquid passage ports; and storage chamber means for generating laminar flow across chambers comprising a flow setting plate vertically provided in each of said liquid storage chambers and having a multiplicity of liquid passage ports.

4,335,747

CONNECTING DEVICE FOR CONDUITS

Takashi Mitsumoto, Toyota, and Hiroshi Nakashima, Musashino, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Japanese National Railways, Tokyo, both of, Japan

Filed Oct. 21, 1980, Ser. No. 199,340
Claims priority, application Japan, Oct. 26, 1979, 54/138865
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.06 6 Claims



1. A device for connecting conduits in an air-tight seal while excluding the introduction of exterior gases comprising:

a female connecting element including an elongated, open-ended pipe defining an elongated cyindrical bore which narrows at one end to a smaller diameter pipe for communication with a conduit;

a male connecting element including a cylindrical member with an outer diameter slightly smaller than the diameter of said elongated cylindrical bore so that said cylindrical member is slidably receivable in said cylindrical bore, said male connecting element further including an inner pipe, coaxial with said cylindrical member, for communication at one end with a conduit and at the opposite end with said smaller diameter pipe of said female connecting element;

first ball valve means including a first housing adapted to be fitted in a sealed relationship at its one end to said female connecting element, said first housing including an interior cavity, a first mating surface at its other end, and a bore from one end to the other with a diameter sufficient to pass the male connecting element therethrough;

a first spherical valve mounted in a sealed relationship within the cavity of said first housing, said first spherical valve having a diametrically extending through-hole with a diameter sufficient to pass the male connecting element therethrough;

second ball valve means including a second housing with a bore from one end to the other with a diameter sufficient to slidably receive in a sealed relationship said male connecting element, said second housing further including an interior cavity and a second mating surface at one end of said bore adapted for mating engagement in a sealed relationship with said first mating surface;

a second spherical valve mounted in a sealed relationship within the cavity of said second housing, said second spherical valve having a diametrically extending through-

hole with a diameter sufficient to pass the male connecting element therethrough;

the bores at said first and second mating surfaces defining openings which align when the mating surfaces are engaged with each other;

one of said first and second spherical valves projecting beyond the mating surface corresponding to its respective housing, and the other spherical valve having a partial spherical recess sized to receive the projecting portion of said one spherical valve when said first and second mating surfaces are engaged with each other;

first actuating means for moving the first spherical valve between an open position where its through-hole is aligned with the opening in the first mating surface and a closed position where the opening in the first mating surface is closed by the first spherical valve; and

second actuating means for moving the second spherical valve between an open position where its through-hole is aligned with the opening in the second mating surface and a closed position where the opening in the second mating surface is closed by the second spherical valve and the partial spherical recess is aligned with the opening in the corresponding mating surface;

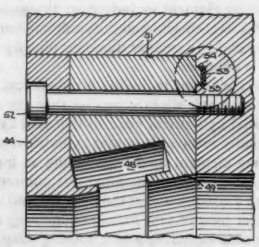
whereby when said first and second mating surfaces are engaged in a sealed relationship and said first spherical valve and said second spherical valve are moved to the open positions, said male connecting element is slidably insertable into said female connecting element so that the inner pipe of said male connecting element is connected in a fluid-flow relationship with the smaller diameter pipe of said female connection element.

4,335,748

BIDIRECTIONAL CONTROL VALVE

Ronald A. Olansen, Lyme, Conn., and Linda Pavelski, Ashaway, R.I., assignors to Posi-Seal International, Inc., North Stonington, Conn.

Filed Apr. 14, 1980, Ser. No. 139,751
Int. Cl.³ F16K 1/22, 5/00
U.S. Cl. 137—614.11 **12 Claims**



1. A fluid flow control valve comprising a valve body having first and second spaced apart faces and an axial passageway for providing a fluid flow path between the faces; a valve disc mounted in the body, on an axis which perpendicularly intersects the flow axis of the passageway, for rotation between a valve shut position in which the valve disc is perpendicular to the flow axis and a fully open position in which the valve disc is substantially parallel to said flow axis, the valve disc having an annular sealing surface on one side of the axis of disc rotation; an annular seat ring of elastic material mounted in the valve body in a first counterbore positioned so that the seat ring contacts the sealing surface of the valve disc when the disc is in the shut position; and a retainer ring adjacent to the first valve body face to keep the seat ring in said first counterbore, the retainer ring forming with the first counterbore an undercut groove, and the seat ring being bifurcated in cross section to form a rib portion which extends through the groove opening to make interfering elastic contact with the respective sealing surface of the valve disc and two skirt portions which make interfering elastic contact with the sidewalls of the groove, wherein the improvement comprises:

a second counterbore is formed in said first face of the valve body, the valve further comprising a seal ring slidingly fitting in said second counterbore, said first counterbore being formed in said seal ring, said seal ring and said retainer ring forming said undercut groove and a circular groove being provided in one of the mating surfaces of one of the second counterbore and the seal ring;

means positioned in said circular groove for sealing between the valve body and the seal ring, said sealing means comprising a compressible ring made of a material resistant to the operating temperatures, pressures, and fluid of the intended valve service; and

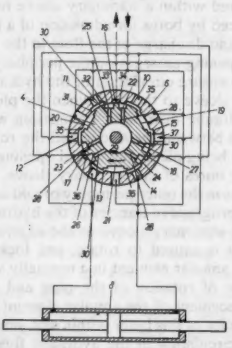
means for detachably fastening the retainer ring and the seal ring to the valve body.

4,335,749

ROTARY SLIDE STEERING VALVE FOR AUXILIARY POWER STEERINGS OF MOTOR VEHICLES

Wolfgang Walter, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 21, 1979, Ser. No. 68,363
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835815
Int. Cl.³ F15B 9/10
U.S. Cl. 137—625.22 **14 Claims**



1. A rotary control valve of the kind having a valve sleeve member (6) encompassing a valve plug member (4) and means (2, 3) for effecting relative rotation therebetween wherein said members have respective groove means with flow control edges (31–35) coacting between said valve members for pressure flow and return flow control whereby pressure and return flow to and from a servomotor is controlled by relative rotation of said members, and which includes respective connection means (A, B, C, D, 37, etc.) for a pressure supply port (7), sump return port (9), and for servomotor (8) chambers wherein said flow control edges selectively effect closure and opening of flow upon relative rotation of said valve members to direct pressure flow to a servomotor and return flow therefrom and in a neutral position bypass flow from a pressure supply to sump return; the improvement which comprises:

one (4) of said members having throttling means (28) communicating with return flow groove means (16) of the other (6) of said members in a relatively rotated position of said valve members to throttle return flow through said valve from a servomotor wherein said throttling means comprises a flow through passage means of predetermined size to effect noise stifling throttling;

said flow control edges (31–35) alternately opening and closing to alternately direct return and pressure flow

between said valve and a servomotor, dependent on direction of relative rotation;

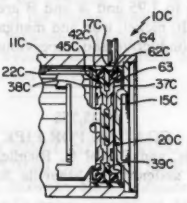
all said flow control edges being disposed to be open in a neutral position of said valve members to permit flow to bypass said throttle means from pressure supply port to sump return port.

4,335,750

REVERSING VALVE CONSTRUCTION AND PISTON HEAD ASSEMBLY THEREFOR AND METHODS OF MAKING THE SAME

Werner R. Bauer, and Robert A. Van Fossen, both of Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 958,029, Nov. 6, 1978, Pat. No. 4,245,670.
This application May 12, 1980, Ser. No. 149,031
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ F16K *31/122*; F16J *9/06*
U.S. Cl. 137—625.29 **5 Claims**



1. In a reversing valve construction comprising a housing means having an internal peripheral surface, a movable valve member disposed in said housing means, a piston unit disposed in said housing means and being interconnected to said valve member, said piston unit having opposed piston heads that define a main chamber of said housing means therebetween, said housing means having end portions respectively cooperating with said piston heads to define a pair of control chambers therewith and separated from said main chamber by said piston heads, said end portions respectively having valve seats facing said control chambers in directions substantially transverse to the direction of movement of said piston unit in said housing means, each said piston head having a front disc member and a backing plate, each said piston head having a flexible seal member secured between its respective front disc member and backing plate, each said seal member having an integral peripheral skirt, each said piston head having biasing means urging its respective skirt of its respective seal member into sliding and sealing engagement with said internal peripheral surface of said housing means, the improvement wherein each said biasing means comprises an annular resilient O-ring member separate from its respective seal member and being carried by one of said backing plate and said front disc member of its respective piston head so as to radially engage and urge its respective skirt radially outwardly into said sliding and sealing engagement, each said seal member of its respective piston head being adapted to close its respective valve seat when moved thereagainst by said piston unit.

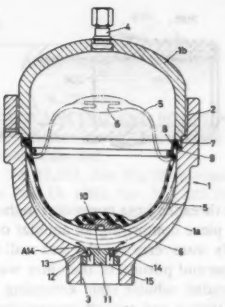
4,335,751

ACCUMULATOR

Kazuo Sugimura, and Nobuyuki Sugimura, both of 308, Mabase Shimizu-shi, Shizuoka-ken, Japan

Filed Jun. 9, 1980, Ser. No. 158,057
Claims priority, application Japan, Aug. 15, 1979, 54-103711
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **4 Claims**

1. An accumulator in which an interior of a vessel main body is partitioned into a gas chamber and a liquid chamber by means of a diaphragm made of an elastic material such as rubber and a liquid feed/discharge port is provided at an end portion of said liquid chamber, characterized in that a mushroom-shaped shield body is disposed coaxially at the inside end portion of said liquid feed/discharge port, a back surface tapered section having its diameter successively increased towards said liquid chamber is formed on the backside of said shield body, an inner surface tapered section having its diameter successively increased towards said liquid chamber is formed along the circumference of the liquid feed/discharge port in said vessel main body to provide an annular flow path between said back surface tapered section and said inner surface tapered section, a plurality of guide blades are disposed within said annular flow path and are provided integrally with the back surface tapered section of said mushroom-shaped shield body.

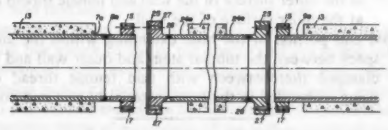


4,335,752

FLANGED PIPE

Maurice N. Sumner, Houston, Tex., assignor to The Sea Horse Corporation, Houston, Tex.

Continuation of Ser. No. 636,311, Nov. 28, 1975, abandoned.
This application Oct. 7, 1977, Ser. No. 840,319
Int. Cl.³ F16L *55/18*
U.S. Cl. 138—97 **1 Claim**



1. A method of repairing continuous submarine pipeline consisting of welded pipe sections comprising;

locating a continuous submarine pipeline having a plurality of coupling bosses in array therealong,

cutting said pipeline adjacent to two of said bosses,

removing said cut portion of pipeline between said two bosses,

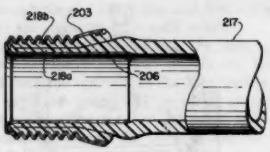
placing a pipe section corresponding to said cut out portion between said two bosses on said pipeline, said pipe section having means thereon adapted to cooperate and engage with said bosses on said pipeline, and

securing and sealing said pipe section to said two bosses thereby reconstructing said pipeline.

4,335,753
HOSE CONNECTORS AND HOSES EQUIPPED WITH SAME

Richard D. Frye, 900 Lime La., Marathon, Fla. 33050

Filed May 9, 1980, Ser. No. 148,581
Int. Cl.³ F16L 33/20
U.S. Cl. 138—109 4 Claims



1. A male threaded hose connector in the form of an integral sheet metal piece comprising an annular outer wall;

a generally transverse annular end wall extending inwardly from one end portion of the outer wall; and

an open-ended tubular stem extending from the end wall axially within and spaced concentrically from the outer wall; a major portion of the length of the outer wall being in the form of screw threads commencing at said one end portion,

the screw threads presenting male thread crests at the outer surface of the wall and female thread crests at the inner surface of the wall,

there being no portion of the outer wall between the screw threads and the end wall which has an outer diameter large enough to interfere with application to the male threaded connector of a female connector,

the tubular stem extending for at least the axial length of said major portion.

3. As an article of manufacture, the combination of

a length of hose having a free end portion formed of material which is flexible and compressible; and

a male threaded connector secured to said free end portion, said connector being in the form of an integral sheet metal piece comprising

an annular outer wall,

a generally transverse annular end wall extending inwardly from one end portion of the outer wall, and

a tubular stem extending from the end wall axially within and spaced concentrically from the outer wall,

a major portion of the length of the outer wall being in the form of screw threads commencing at said one end portion, the screw threads presenting male thread crests at the outer surface of the wall and female thread crests at the inner surface of the wall;

said end portion of the hose extending within the annular space between the tubular stem and outer wall and being clamped therebetween with said female thread crests being embedded in the hose material of said end portion.

4,335,754
PREVENTION OF HYDROGEN EMBRITTLEMENT OF METALS IN CORROSIVE ENVIRONMENTS

Alfred C. C. Tseung, 60 Grove Ave., London N10 2AN, England; Anthony I. Onuchukwu, c/o Bayero University, PMB 3011, Kano, Nigeria, and Ho C. Chan, 63 Church Way, London N20 OJZ, England

Filed Nov. 24, 1980, Ser. No. 209,481
Claims priority, application United Kingdom, Nov. 28, 1979, 7941116
Int. Cl.³ F16L 9/14
U.S. Cl. 138—146 19 Claims

14. A gas or oil pipeline component at least part of the surface of which is provided with a first coating comprising an active substrate selected from FeS and a mixed sulphide of the general formula

$$A_xB_{(4-2x)}S_{(3.6-4.0)}O_{(0.4-0)}$$

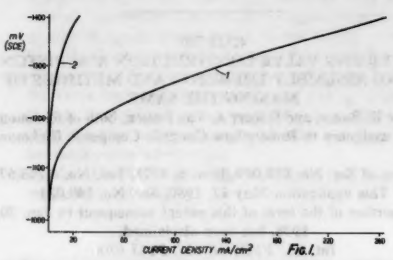


Fig. 1.

wherein x is 0.05 to 1.95 and A and B are any two different metals from cobalt, nickel, iron and manganese, and a second protective, non-conductive and impervious coating over said first coating.

4,335,755
COATING FOR PIPE

Thomas H. Sadler, and Daniel G. Richlie, both of Jefferson County, Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Apr. 9, 1981, Ser. No. 252,517
Int. Cl.³ F16L 9/14; B05D 3/02; B32B 9/04
U.S. Cl. 138—145 14 Claims

1. A hydraulic calcareous cementitious article having a surface exhibiting improved water impermeability and abrasion resistance comprising a cementitious article containing at least one surface coated with an aqueous dispersion of an emulsion containing a hydroxylated polydiorganosiloxane containing about two silicon-bonded hydroxyl groups and containing free silica wherein said coating on said surface is curable to an elastomeric coating of sufficient thickness that when cured and allowed to remain in contact with open air for approximately four weeks will develop the predetermined water impermeability and abrasion resistance.

9. A method of treatment for rendering a cementitious article more resistant to attack by aggressive water in contact therewith comprising the steps of applying to the surface to be so treated an aqueous dispersion of colloidal silica and an aniomically stabilized hydroxylated polydiorganosiloxane and an organometallic cure accelerating agent; curing the elastomeric coating by the removal of water by evaporation for a period of time sufficient to cure the elastomeric film coating and allowing the coated surface to stand in air for a sufficient period of time after cure and before use to develop greater abrasion resistance as measured by the U.S. Bureau of Reclamation test for pipe lining materials than the cured film coating initially exhibits.

4,335,756
STERILIZED MEDICAL TUBING COVER

Russell G. Sharp, Sugar Land; Charles C. Reed, Houston; Denton A. Cooley, Houston; Terry N. Crane, Houston, and William R. Wilkinson, Missouri City, all of Tex., assignors to Texas Medical Products, Inc., Houston, Tex.

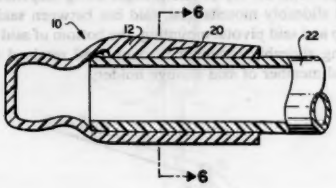
Filed Jan. 21, 1981, Ser. No. 226,657
Int. Cl.³ F61L 55/10; A61M 1/00; A61B 19/02; A61M 25/00
U.S. Cl. 138—89 7 Claims

1. A cover for tubing comprising:

a tubular portion having first and second ends and having an inner surface which forms an opening of generally uniform diameter, said first end being configurated to receive

the tubing within the opening, said tubular portion being formed from a flexible material; and

a plurality of rib members formed on the inner surface of the tubular portion, said rib members being of increasing cross-sectional height from the first end to the second end



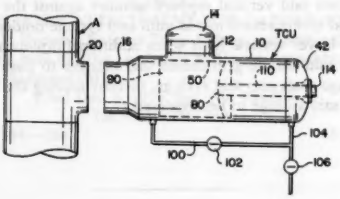
of said tubular portion, such that said rib members form a diameter within the opening which is smaller than the outer diameter of the tubing, whereby the walls of said tubular portion between said plurality of rib members are deformed from cylindrical shape when the end of a length of tubing is inserted therein.

4,335,757

TEMPORARY PIPELINE CAPPING UNIT AND METHOD OF USING SAME

Robert J. Lankston, Shawnee, Kans., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 15, 1980, Ser. No. 150,198
Int. Cl.³ F16L *55/10, 55/16*
U.S. Cl. 138—92 **33 Claims**



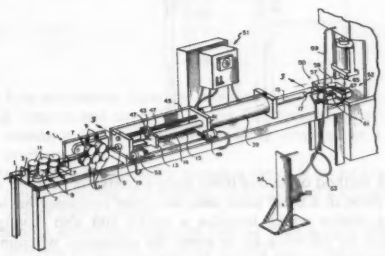
1. A temporary pipeline capping unit to be permanently secured over a side opening in a pipeline for allowing subsequent connection of a branch line onto said pipeline and/or communicating said branch line with said side opening while maintaining fluid flow and/or operating pressure in said pipeline, said capping unit comprising: a housing with an elongated chamber having first and second axially spaced ends, a generally cylindrical inwardly facing surface at least at said first end, means forming an axial opening communicating with said chamber at said first end, and means forming a branch opening intersecting said cylindrical surface adjacent said first end; a sleeve member having a generally cylindrical portion with an outer surface generally matching said inwardly facing surface; means for slidably sealing said outer surface and said inwardly facing surfaces; said sleeve member being axially shiftable in said chamber between a closed position adjacent said first end with said outer surface of said sleeve member sealing said branch opening from said chamber and an opened position with said sleeve member shifted away from said first end and with said branch opening communicated with said axial opening; means for securing said sleeve member in said closed position; means for selectively releasing said sleeve member only when it is desired to shift said member into said opened position; and, fluid means operated by pressure in said pipeline for selectively shifting said sleeve member from said closed position to said opened position whereupon said sleeve member remains in said opened position.

4,335,758

APPARATUS FOR ADVANCING AND FORMING A WIRE

Stanley E. Williams, McLeansboro, Ill., assignor to George Koch Sons, Inc., Evansville, Ind.

Continuation of Ser. No. 47,213, Jun. 11, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,302
Int. Cl.³ B21F *1/02*
U.S. Cl. 140—88 **4 Claims**



1. An apparatus for advancing a strand comprising:

one or more anti-backing chucks for allowing movement of a strand in a forward direction and restraining movement in a rearward direction;

means for reciprocally moving one of said chucks to a forward position during which the strand is carried forward by said chuck, and to a rear position during which the strand is not moved by said chuck;

said means for moving said one chuck including a piston and cylinder mechanism, a hollow member extending axially through the piston and cylinder mechanism and having first and second ends extending axially outward therefrom for receiving the strand, the hollow member being connected to and reciprocally movable in response to the piston and cylinder mechanism, said chuck being coupled to said first end of the hollow member; and

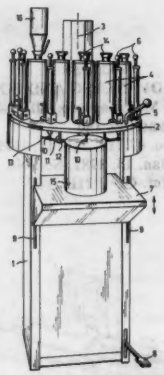
means for adjustably controlling the reciprocating motion of said one chuck to gauge the quantity of the strand being advanced with each reciprocating motion, said control means including stop means variably positionable relative to said second end of the hollow member for establishing absolute limits of movement of the hollow member, sensing means variably positionable relative to the second end of the hollow member for detecting the movement of said chuck to its forward and rear positions and communicating with said piston and cylinder mechanism to reverse the direction of movement of said hollow member, means coupled to the hollow member for engaging the sensing means and stop means, the stop means being variably positioned in proximity to the sensing means to prevent damage to the sensing means, means for forming the advanced portion of the strand into a desired shape in response to the reciprocating motion of the hollow member, and means for cutting the strand to produce an article having the desired shape and a size determined by the quantity of strand advanced.

4,335,759

METHOD OF MIXING PAINTS AND THEIR TONERS

Veikko Päättiniemi; Eero Koivisto, both of Pirkkala; Heikki Kokki, and Aslak R. Heikel, both of Tampere, all of Finland, assignors to Winter Osakeyhtio, Tampere, Finland

Filed Aug. 23, 1979, Ser. No. 69,030
Claims priority, application Finland, May 10, 1979, 791500
Int. Cl.³ B65B 3/04
U.S. Cl. 141—5 2 Claims



1. A method of mixing toner from a container of toner with basic paint in a basic paint can, the toner container having a dosing device which includes a nozzle and also having an opening for allowing air to enter the container, wherein the improvement resides in that, in order to prevent drying of the toner remaining in the container, said opening is provided with a back pressure valve which is disposed to allow air to enter the container and prevent air from leaving the container, and the method comprises the steps of employing the dosing device to withdraw a measured quantity of toner from the container, and introducing said measured quantity of toner into the basic paint can by way of the nozzle of the dosing device, withdrawal of toner from the container by way of the dosing device causing a reduction of pressure of air in the container so that the back pressure valve opens and allows air to enter the container and subsequently closes to prevent escape of air from the container and consequent drying of the toner remaining in the container.

4,335,760

APPARATUS FOR HOLDING A SYRINGE AND FILLING AN AMPULE

Balachandra N. Kabadi, South River, and Michael S. Farkas, Spotswood, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 6, 1980, Ser. No. 194,309
Int. Cl.³ B65B 3/04
U.S. Cl. 141—129 10 Claims

1. An apparatus for holding a syringe and filling an ampule comprising:

(a) a housing having a base and a vertical support member;

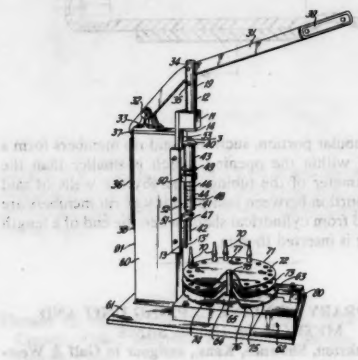
(b) a syringe holder comprising a plate which is slideably mounted on said vertical support member, said syringe holder including means for holding a syringe and means for preventing said syringe from sliding downward in said syringe holder in response to a downward force applied to the shaft of the syringe, said syringe holder further comprising a head member at its upper end, said head member being adapted to slideably retain the end of a plunger;

(c) vertical limit means for limiting the upward and downward vertical movement of said syringe holder on said vertical support member;

(d) spring return means for biasing said syringe holder at its upper vertical limit on said vertical support member;

(e) a bar which is pivotally mounted at the top of said vertical support member, said bar having a handle grip at one end;

(f) a plunger for applying a downward force onto said syringe shaft, the top of said plunger being suspended from, and slideably mounted on, said bar between said handle grip and said pivotal mounting, the bottom of said plunger being slideably mounted through, and retained by, said head member of said syringe holder;



(g) spring return means for biasing said handle grip upward, whereby, when said handle grip is moved downward, said plunger slides through said head member, contacts the shaft of said syringe, and forces said syringe holder to slide down said vertical support member against the force of said spring return means until said syringe holder reaches its lower vertical limit when additional downward force on said handle grip causes said plunger to push said syringe shaft into said syringe, thereby forcing the contents of said syringe to be dispensed.

4,335,761

RECIPROCAL BOTTLE FILLING DEVICE

Michael H. Peronek, Chagrin Falls, Ohio, assignor to FCI, Inc., Cleveland, Ohio

Filed Jul. 21, 1980, Ser. No. 170,712
Int. Cl.³ B65B 3/04; B67C 3/26
U.S. Cl. 141—371 5 Claims

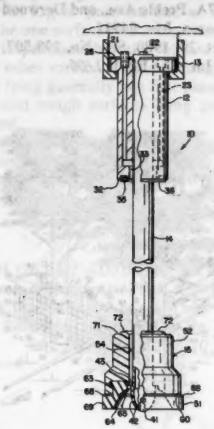
1. In a bottling machine movable filling assembly having a vertical axis, comprised of,

of hollow filling tube extending axial downwardly, having a lower portion with an outer diameter;

an attachment means adapted to attach said filling assembly to a bottling machine; and,

a centering guide slidably mounted on said filling tube, the improvement which comprises said centering guide being comprised of; an upper holding part; a non-metallic pliable lower bell part having a continuous lower surface comprised of an inner sealing portion adapted to form an airtight seal with a bottle flaring outwardly and downwardly from a central aperture and an outer portion flaring outwardly and downwardly from said inner portion; and, an annular gap between said upper holding part and

said lower bell part above said outer portion extending radially outwardly allowing said outer portion to deform



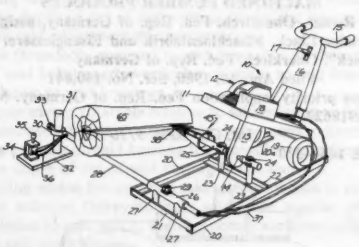
and said lower bell part to tilt when a bottle is encountered.

4,335,762

LOG SPLITTER ATTACHMENT FOR GARDEN TILLER

Leonard V. Reaume, Natchez Trace Village, and James O. Hall, Jackson, both of Miss., assignors to Magna American Corporation, Raymond, Miss.

Filed Dec. 6, 1978, Ser. No. 966,853
Int. Cl.³ B27L 7/00
U.S. Cl. 144—194 15 Claims



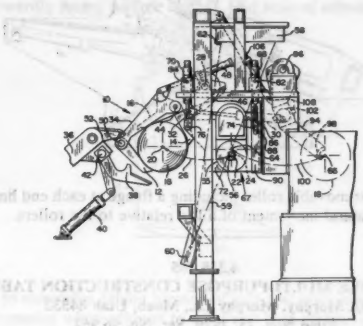
15. A log splitter attachment for use with garden tillers having a tiller frame, a tiller power drive means, and a tiller drive shaft, said splitter attachment comprising: a frame portion, attachment means mounted on said frame portion to releaseably attach said frame portion to said tiller drive shaft, a log splitting screw having means attached thereto for releaseable attachment to said tiller drive shaft to allow for rotational movement of said splitting screw in unison with said tiller drive shaft and in generally axial alignment therewith, and a log support bar attached to said frame portion and extending outwardly therefrom for ground engaging support, to provide support for logs during use and to stabilize said frame portion and said tiller.

4,335,763

VENEER LATHE CHARGER HAVING IMPROVED POSITIONING FOR CHARGER SPINDLES

Arthur L. McGee, Lake Oswego, Oreg., assignor to The Coe Manufacturing Co., Painesville, Ohio

Filed May 29, 1980, Ser. No. 154,201
Int. Cl.³ B27L 5/02
U.S. Cl. 144—209 A 16 Claims



1. Log processing apparatus, comprising:

log support and centering means for supporting and positioning a log with its axis roughly centered at a scan position;

charger spindle means for engaging the ends of the log after rough centering and rotating said log about a spindle axis at said scan position;

scanning means for scanning the log with a light beam at different rotational positions of said log to determine the optimum yield axis of the log for optimum production;

spindle support and adjustment means attached to linear positioning means for supporting and adjusting the position of the charger spindle means both vertically and horizontally in response to linear movement of said linear positioning means in one direction, to move the log and position its optimum axis at a transfer position which is located at a predetermined position relative to a work axis; and

transfer means for engaging the log in said transfer position and for transferring the log from said transfer position to a work position where the log is cut after disengaging the charger spindle means so that the optimum axis of the log is aligned with the work axis.

4,335,764

VENEER PEELING APPARATUS

Charles J. Schmidt, P.O. Box 757, Diboll, Tex. 75941

Filed Dec. 17, 1980, Ser. No. 217,272
Int. Cl.³ B27L 5/02
U.S. Cl. 144—209 R 12 Claims

12. A veneer peeling apparatus for peeling veneer off of a horizontally positioned wood log comprising,

a fixed rotatable roller positioned to be above the longitudinal axis of the log,

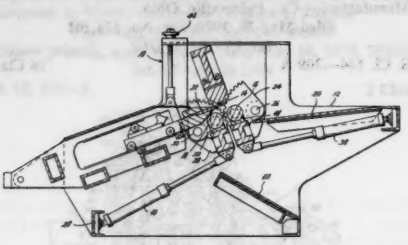
a cutting knife positioned adjacent and below the fixed roller for peeling veneer from a log,

first and second movable rollers positioned below the first roller, the first roller being positioned above the second rollers, said first and second rollers movable toward and away from the fixed roller and each other, said movable rollers being positioned equidistance from the fixed roller at all times,

all of said rollers having horizontal longitudinal axis parallel to each other,

means for rotating all of said rollers at both ends thereby rotating a log positioned between the rollers and against

the knife, the speed of rotation of the surface of the fixed roller being slower than the speed of rotation of the surfaces of the movable rollers, and



said first movable roller including a flange at each end limiting lateral movement of a log relative to the rollers.

4,335,765

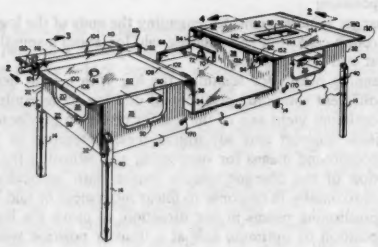
PORTABLE MULTI-PURPOSE CONSTRUCTION TABLE

Rholand D. Murphy, Murphy La., Moab, Utah 84532

Filed Nov. 23, 1979, Ser. No. 96,962

Int. Cl.³ B27C *9/00*

U.S. Cl. 144—286 R **5 Claims**



4. A portable multi-purpose construction table comprising:

motorless frame means comprising substantially rigid body means and floor engaging leg means connected to and holding the body means above the leg means, the body means being vertically stepped so that a first part of the body means extend to a first elevation and a second part of the body means extend to a second, higher elevation;

the frame means further comprising first and second platform means vertically spaced from each other, one platform means being superimposed over the first part of the body means the other platform means being superimposed over the second part of the body means, each pletform means comprising at least one power tool receiving site, the two platform means presenting vertical offset but adjacent substantially horizontal exposed top surfaces;

first and second adjustable tool attachment means carried by the respective platform means of the frame means and sized, shaped and located at the two tool receiving sites to releasably secure the base of two different hand power tools having independent motors in a substantially horizontal attitude one at each said site;

third platform means adjacent the lower one and spaced from the higher one of the other two platform means, the third platform means being at the same elevation as the higher of the two other two platform means, the third platform means comprising a third tool receiving site spaced from the two other tool receiving sites, two being disposed at the underside of two of the platform means and one at the top side of the remaining platform means.

4,335,766

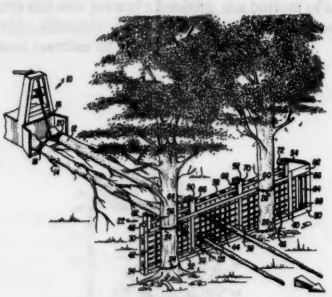
APPARATUS AND METHOD FOR DELIMBING FELLED TREES

Lawny Davis, Box 287A, Preble Ave., and Derwood Preble, Hill Top Rd., both of Anson, Me. 04911

Filed Oct. 20, 1980, Ser. No. 198,507

Int. Cl.³ B27L *1/06*

U.S. Cl. 144—343 **22 Claims**



1. Apparatus for removing limbs from felled trees, comprising:

an essentially upright frame having a central opening;

a plurality of flexible elements extending across said central opening and defining a grid of said elements within said central opening, said grid having a plurality of tree-receiving apertures;

means operatively engaged with said frame for resiliently supporting said plurality of flexible elements and permitting said elements to move so that tree-receiving apertures expand and contract to accommodate the changing diameter of a tree trunk; and

means operatively engaged with said frame for anchoring said apparatus relative to the ground.

4,335,767

METHOD AND APPARATUS FOR THE CHIPPING DISSECTION OF TREE LOGS INTO ALL-ROUND MACHINED LUMBER PRODUCTS

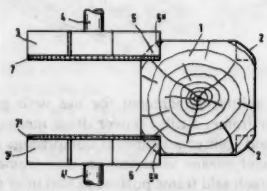
Alfred Reuter, Oberkirch, Fed. Rep. of Germany, assignor to Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck", Oberkirch, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,841

Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918622

Int. Cl.³ B27C *9/10*

U.S. Cl. 144—370 **7 Claims**



1. A method of processing a log to produce lumber, comprising the steps of:

cutting said log to present four flattened faces thereon with wany edge regions between adjacent faces, said faces being substantially at right angles relative to each other and arranged in pairs with the faces of each pair being generally opposed;

milling said wany edge regions to present, at each such region, a pair of generally planar, interconnected surfaces, said milling step being accomplished, at each such region, by sawing the log to produce one of said surfaces and to render the one surface relatively smooth, and by chipping the log to produce the other of said surfaces which renders the other surface relatively rough, two of said rough surfaces lying generally in a first plane, and the remaining two of said rough surfaces lying generally in a second plane; and

sawing said log along said first and second planes to separate two boards from said log and leave a central cant, said last-mentioned sawing serving to smooth said initially rough surfaces.

4,335,768

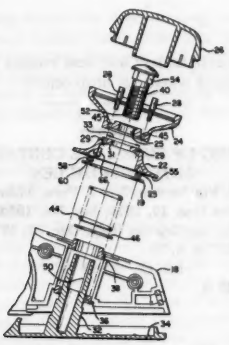
DEPTH OF CUT ADJUSTMENT MECHANISM

Rainer Bachmann, Hohenstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 18, 1980, Ser. No. 160,822

Int. Cl.³ B27C *1/10*

U.S. Cl. 145—4 **10 Claims**



1. In a power planer comprising a housing incorporating a motor driven cutting blade disposed intermediate a rear fixed shoe and an adjustable front shoe, and adjustment means for adjusting the elevation of said front shoe so as to effectively vary the depth of cut of said cutting blade; the improvement wherein said adjustment means comprises:

a bolt threadedly engaged to said front shoe so that rotation of said bolt imparts vertical movement to said front shoe relative to said housing;

selector means rotatable relative to said housing and having associated therewith scale means referenced to fixed reference means on said housing for providing an indication of the depth of cut of said cutting blade; and

coupling means for coupling said selector means to said bolt for rotation therewith in a selectable angular position relative to said bolt to thereby permit accurate calibration of said scale means.

4,335,769

FOLDABLE CONTAINER

Gerald P. M. McManus, The Old Parsonage, Peaslake, Surrey, England

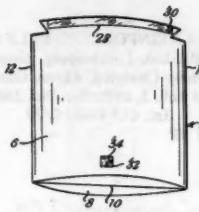
Filed Oct. 1, 1980, Ser. No. 192,898

Claims priority, application United Kingdom, May 7, 1980, 8015147

Int. Cl.³ B65D *33/14*

U.S. Cl. 150—1 **1 Claim**

1. A foldable generally rectangular container bag having a single opening in an upper portion thereof through which the bag can be filled, said bag having substantially coextensive front and rear walls connected together along opposite side edges and a foldable bottom wall secured to the front and rear walls and operable to allow the bag through opposite outward bowing of said front and rear walls to open for filling of the bag through its said upper opening, and said bag having a central part of its rear wall extending above the opening and substantially across the width of the opening, a strip of adhesive with a removable backing strip extending along said upwardly extending central part substantially from end to end and on a rearwardly facing surface thereof, said strip of adhesive serving to somewhat inhibit bowing of said rear wall adjacent the fill opening when adhered to a flat seat back or the like, and a second adhesive region with a removable backing strip on a rearwardly facing surface of the bag rear wall spaced substantially below said first adhesive strip and near the bottom of the bag, the width of said second adhesive region being substantially less than the width of said rear wall so as not to inhibit bowing thereof as aforesaid below said fill opening when adhered to a seat back or the like.



4,335,770

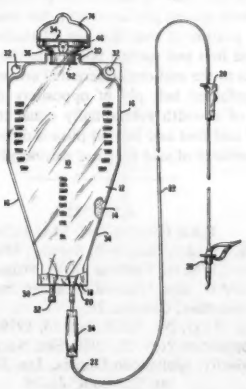
ENTERAL FEEDING CONTAINER

Lee K. Kulle, Mundelein, and Kenneth W. Larson, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 8, 1980, Ser. No. 195,156

Int. Cl.³ A61M *31/00*

U.S. Cl. 150—8 **16 Claims**



1. An enteral feeding container, which comprises a container body defined by a pair of opposed, flexible, collapsible container walls, an outlet in the bottom of said container, said outlet communicating with flexible tubing which terminates at its outer end with connector means for communication with an enteral feeding catheter, and an inlet port and closure at the top of said container having a diameter of at least 2 cm., said inlet port and closure comprising a funnel member sealed to said container walls and communicating therethrough, and a clo-

sure member attached to said funnel member by integral hinge means, said funnel member defining an outwardly projecting cylindrical port, said closure member defining outer and inner annular walls spaced apart to define an annular recess proportioned to sealingly receive said outwardly projecting cylindrical port when said closure is sealing the inlet port, said inlet port and closure carrying at least one annular sealing projection for sealing between said cylindrical port and annular walls when the inlet port and closure is in closed relation.

4,335,771

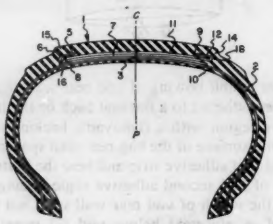
TIRE WITH A REINFORCING BELT STRUCTURE

Rene F. Reuter, Warken, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 2, 1981, Ser. No. 230,566

Int. Cl.³ B60C *9/20*

U.S. Cl. 152—361 FP **10 Claims**



1. A tire with a reinforcing belt structure which comprises a first reinforcing folded belt ply, said first folded belt ply comprising a main body portion and a single folded end portion disposed radially outwardly with respect to the axis of rotation of said tire of said main body portion, a second reinforcing belt ply having a main body portion and a single folded end portion disposed radially outwardly with respect to the axis of rotation of said tire of said main body portion of said second ply, said second ply being disposed radially outwardly of said first ply and oriented such that the lateral end portion of the main body portion of said second ply lies within the space formed by the folded end portion of said first ply, characterized in that the cords of said first and second plies lie in the same orientation with respect to the mid-circumferential centerplane of the tire, a middle unfolded belt ply of oppositely disposed oriented cords and of a width substantially equal to the main body portions of said first and second plies is disposed between the unfolded portions of said first and second plies.

4,335,772

TIRE CHANGING MACHINE

Leslie Bubik, Toronto; Stanley B. Barclay, Mississauga; Eugene L. Knaitner, Weston; Frederic D. M. Williams, Mississauga, and Bernard D. Alm, Willowdale, all of Canada, assignors to FMC Corporation, Chicago, Ill.

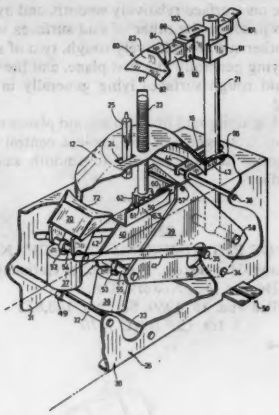
Continuation of Ser. No. 3,823, Jan. 16, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 208,106

Claims priority, application Canada, Jan. 23, 1978, 295475

Int. Cl.³ B60C *25/06*

U.S. Cl. 157—1.28 **12 Claims**

1. In a tire-changing machine having a frame, a platform for receiving a wheel rim having a drop centre mounted on top of said frame, and a rotatable shaft having a free upper end extending from said table, the improvement which comprises a pair of reversely coacting fluid motors each with pistons, the piston of a first fluid motor being operatively connected with a first bead breaker shoe and the piston of a second fluid motor being operatively connected to a second bead breaker shoe; one of said pistons being further operatively connected to said rotatable shaft to drive said shaft in first and second reverse directions about a vertical axis, and individual guide means for



guiding the travel of each of said bead breaker shoes in a locus inward toward said wheel rim drop centre.

4,335,773

WINDING UP SUNSHADE CURTAIN FOR MOTOR-VEHICLES

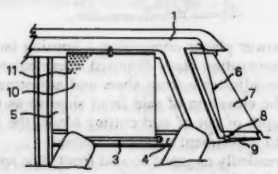
Lamberto Masi, Via Newton No. 9, Pero, Milan, Italy

Filed Dec. 19, 1979, Ser. No. 105,097

Claims priority, application Italy, Dec. 21, 1978, 31143 A/78; Sep. 17, 1979, 25776 A/79

Int. Cl.³ E06B *9/08*

U.S. Cl. 160—23 R **13 Claims**



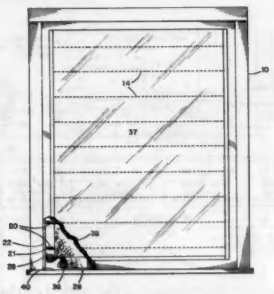
1. In a sunshade curtain for motor-vehicles comprising a case mounted along one edge of a window, the curtain comprising a sheet of flexible opaque material provided with a dark colored inner face and with openings arranged in predetermined parallel rows, one edge of said sheet being fastened to a winding-up shaft carried by end supporting elements and connected to a spring biasing this shaft to rotate in the winding-up direction of said sheet, the improvement in which the case is composed of an arcuate profiled element, parallelly arranged and partially surrounding said winding-up shaft, said profiled element being provided at both ends with snap fitting means which engage a corresponding seat formed in a respective one of the end supporting elements for said case and winding shaft, said sheet of flexible material having a grip element fastened to the edge opposite the edge fastened to the winding-up shaft, said grip element being turnable through an arc not covered by the case, by partially unwinding said sheet, said grip element being pullable in a first direction when adjacent one edge of the case to unwind said sheet and being pullable in the same direction when adjacent the other edge of the case to unwind the sheet while maintaining the dark colored face on the inside of the motor-vehicle.

4,335,774

THERMAL WINDOW BARRIER OF SOFT FABRIC

Timothy K. Price, Howe Hill Rd., Grantham, N.H. 03753

Filed Jan. 14, 1980, Ser. No. 111,964
Int. Cl.[3] A47H 5/00; E06B 3/94
U.S. Cl. 160—84 R 6 Claims



1. An insulating barrier for window areas comprising:

(a) a rectangular multiple-layer, insulating fabric containing at least one insulating filler layer and having a rolled edge of multiple-layer material similar to said insulating fabric also containing at least one insulating filler layer, said rolled edge extending along at least three edges of said barrier;

(b) a plurality of rows of quilting securing said fabric at intervals parallel to an edge of said fabric;

(c) a pair of tracks on opposite sides of said fabric aligned perpendicular to said rows;

(d) a pair of springs for at least every other row of quilting, one end of each spring in said pair of springs connected to a carrier in a respective one of said pair of tracks; and,

(e) means to secure a second end of each spring to said fabric at a position spaced from the edge of said fabric and related to said rows of quilting, said position spaced from the edge of said fabric being such as to place a tension on said fabric to hold it taut between said tracks with said rolled edge in sealing contact against window jambs at two edges of said barrier, all whereby said fabric may be supported adjacent a window area, extended on said tracks to form a barrier for said window area and retracted from said window area on said tracks to fold in a storage zone.

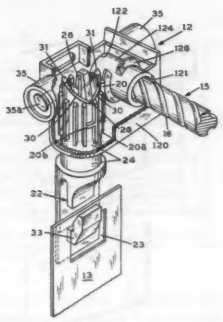
4,335,775

ROTATABLE LOUVER HOLDER FOR LOUVERED VERTICAL VENETIAN BLIND

Kurt H. Frentzel, Zevenhoven, and Herman Oskam, Bergambacht, both of Netherlands, assignors to Hunter Douglas International, N.V., Curacao, Netherlands Antilles

Filed Apr. 3, 1980, Ser. No. 136,953
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913888
Int. Cl.[3] E06B 9/38
U.S. Cl. 160—177 10 Claims

1. A support for supporting a louver from the headrail of a vertically louvered venetian blind comprising a holder, means on said holder for engaging one end of a louver, drive means for rotating said holder and its supported louver about a vertical axis, said drive means including a hub, the axis of said hub extending vertically, said hub having an upper edge, said upper edge comprising a guide surface, said guide surface having at least one low point, a portion of said holder resting in a low point of the guide surface during normal operation of said blind, said holder being free to move with respect to said hub upon an external force being applied to said louver, movement of said holder with respect to said hub when an external force is applied to said louver effecting movement of said portion of said holder along said guide surface to a higher portion thereof, and said holder being movable relative to said hub under the force of gravity when the external force is removed from said louver to effect return of said portion of said holder to a low point on said guide surface, the support being further so constructed that said hub has a stop, said stop being positioned at



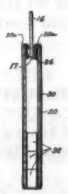
a point removed from said low point, said holder including a cooperating stop positioned to engage the stop on said hub after a predetermined amount of movement of said holder relative to said hub under external force applied to said louver, said stops interreacting with each other resiliently to permit the stop on said holder to pass by the stop on said hub when the external force applied to said louver exceeds a predetermined magnitude.

4,335,776

TASSEL WEIGHT

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Apr. 2, 1980, Ser. No. 136,446
Int. Cl.[3] E06B 9/20
U.S. Cl. 160—320 3 Claims

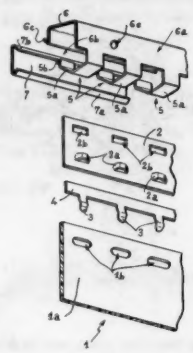


1. A tassel weight for a control cord of a vertical blind, comprising: an oblong tassel body of tubular configuration open from one end thereof to the other and having two pairs of opposite walls, a pair of opposite bores extending through said body adjacent said one end through one of said pairs of walls, a bearing pin supported in said bores, a roller supported by said bearing pin and received within said body and adapted to receive said cord therearound, weight means in said tassel body between said roller and said other end, and an essentially U-shaped metal strip covering one wall of said one pair of walls, the other end of said tassel body thereby closing the same, and the other wall of said one pair of walls, said strip having bent portions extending partially around said one end of said tassel body, said strip forming the sole means carrying said weight means and preventing the same from being displaced from said body when said tassel weight is suspended by said core and for keeping said pin axially in place in said bores.

4,335,777
MULTIPLE STRIPS DOORS

Alexandre M. V. Simon, Montceaux-les-Meaux, France, assignor to Societe Anonyme: "MAVIL", Antony, France

Filed Dec. 10, 1979, Ser. No. 101,984
Claims priority, application France, Dec. 18, 1978, 78 37067
Int. Cl.³ A47H *1/00*
U.S. Cl. 160—332 **1 Claim**



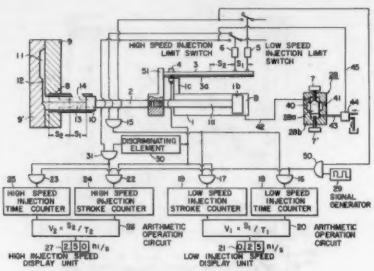
1. A door of the type having multiple vertical strips with mounting plates at their upper ends provided with horizontally spaced perforations thereacross, and having support means with hooks mutually spaced horizontally therealong for engaging said perforations to support the strips, the support means comprising a horizontal longitudinally elongated channel having on one side a vertical face which supports said hooks in said mutually spaced relationship, the hooks extending transversely downwardly from said face and then upwardly across the channel and toward an opposite vertical face of the channel and terminating short of said opposite face to provide an opening between the free ends of the hooks and the opposed edge of the opposite face of the channel, the free ends of the hooks and the opposed edge being folded to diverge away from each other to provide a dovetail guide means; and an elongated panel having opposed longitudinal sides folded toward each other and disposed to engage said dovetail guide means and support the panel thereon for removably closing the opening between the hooks and said opposed edge.

4,335,778
APPARATUS FOR MEASURING INJECTION SPEEDS OF DIE CASTING MACHINES

Noriyuki Motomura, and Hiroyuki Tsuboi, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 941,869, Sep. 13, 1978, abandoned. This application May 27, 1980, Ser. No. 153,624
Claims priority, application Japan, Sep. 20, 1977, 52-113011
Int. Cl.³ B22D *17/32*
U.S. Cl. 164—150 **8 Claims**

1. Apparatus for measuring injection speeds of a die casting machine comprising means for detecting injection times at low and high speed injection strokes, respectively, means for arithmetically calculating low and high injection speeds by dividing said low and high injection strokes by said injection times, and means for displaying said low and high injection speeds as average injection speeds, said injection time detecting means comprising an elongated member provided with a plurality of axially spaced portions having different magnetic characteristics, means responsive to said different magnetic characteristics for generating a pulse signal havig a period corresponding to the injection speed of the die casting machine, low and high speed injection limit switches operated by said elongated member for generating signals when low speed injection is started and when the injection speed is switched from low to high, a signal generator, an AND gate circuit with one input connected to said low speed injection limit switch and the other input connected to receive an output of said signal generator, first determining means responsive to the output of said AND gate circuit for determining the low speed injection time and


HIGH SPEED INJECTION LIMIT SWITCH
LOW SPEED INJECTION LIMIT SWITCH
DISCRIMINATING ELEMENT
HIGH SPEED INJECTION TIME COUNTER
HIGH SPEED INJECTION STROKE COUNTER
LOW SPEED INJECTION STROKE COUNTER
LOW SPEED INJECTION TIME COUNTER
SIGNAL GENERATOR
ARITHMETIC OPERATION CIRCUIT
ARITHMETIC OPERATION CIRCUIT
HIGH INJECTION SPEED DISPLAY UNIT
LOW INJECTION SPEED DISPLAY UNIT

stroke, means for discriminating the period of the signal generated by said pulse signal generating means, and second determining means responsive to the signal generated by said high speed injection limit switch, to the output of said discriminating means and to the output of said AND gate circuit for determining the high speed injection time and stroke.

4,335,779
DEVICE FOR CONTINUOUS HORIZONTAL CASTING

Josef V. Morianz, Illnau, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 971,005, Dec. 19, 1978, Pat. No. 4,211,275. This application Jan. 7, 1980, Ser. No. 109,826
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—440 **10 Claims**

1. An improved apparatus for use in the continuous horizontal casting of molten metal comprising, in combination, a molten metal holding means having a floor and an outlet; a mold in line with said holding means and nozzle means disposed between said holding means outlet and said mold the improvement comprising:

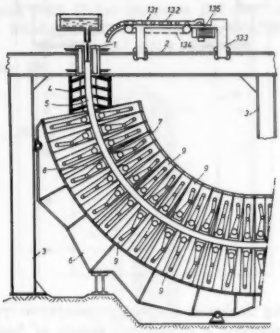
said nozzle means comprising a plate having a first surface facing said holding means and a second surface facing said mold, said plate being provided with an elongated opening lying in a plane substantially perpendicular to the flow of said molten metal and communicating said holding means outlet with said mold, wherein said elongated opening varies in size along substantially the entire length with the greatest cross section at the end points and substantially symmetrically tapering toward the middle so as to provide for preferential metal flow to said mold, said opening having a lower surface provided at least in part with a downwardly sloping run-out surface extending from said first surface of said plate to said second surface of said plate.

4,335,780

CONTINUOUS CASTING PLANT

Max Burkhard, Obere Zelglistrasse 7, CH 8600 Dübendorf, Switzerland

Filed Mar. 27, 1980, Ser. No. 134,469
Int. Cl.³ B22D 11/124, 11/00
U.S. Cl. 164—441 35 Claims



1. In a continuous casting plant comprising

a coolable, open-ended mold for delivering a continuous casting and

a guiding section for constraining said continuous casting to move away from said mold on a predetermined path and for cooling said casting on said path, said guiding section defining a longitudinal center plane of said path and comprising a guiding frame, two banks of walking beams, each of said banks containing a plurality of walking beams, each of said walking beams having a major axis extending parallel to one dimension of said walking beam which is substantially greater than any other dimension of said walking beam, said two banks of walking beams being mounted in said guiding frame and disposed on opposite sides of said path, and drive means for moving each of said beams in successive cycles including moving said beam from an initial position spaced from said path into engagement with said casting on said path, moving said beam in engagement with said casting along said path away from said mold for a predetermined distance, moving said beam away from said path to disengage said beam from said casting, and moving said beam along said path to said initial position while said beam is disengaged from said casting, each of said banks comprising first and second groups of said beams and said drive means being operable to move the beams of the first groups of both said banks with a phase displacement of about one-half period from the beams of the second groups of said banks,

the improvement residing in that

each of said walking beams having said major axis extending transversely to said longitudinal center plane,

said beams are arranged in pairs of registering beams disposed on opposite sides of said path,

a plurality of props are mounted in said guiding frame,

each of said beams is connected to at least one of said props at one end of the latter and is supported by said at least one prop in said guiding frame, and

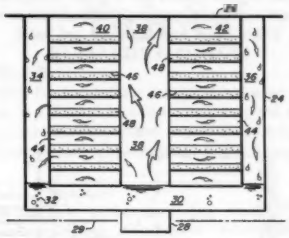
said drive means are operatively connected to said beams by said props.

4,335,781

HIGH POWER COOLER AND METHOD THEREOF

Victor P. Duffy, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 947,672, Oct. 2, 1978, abandoned. This application Dec. 9, 1980, Ser. No. 214,829
Int. Cl.³ F28D 15/00, 21/00
U.S. Cl. 165—1 8 Claims



8. A method of absorbing heat generated by a heat source and keeping said heat source below a predetermined temperature comprising the steps of:

(a) transferring said heat into a rotationally symmetric reservoir of liquid coolant having a boiling point below the predetermined temperature causing said liquid coolant to boil to produce a vapor;

(b) placing said vapor in intimate thermal contact with a rotationally symmetric honeycomb structure containing a solid coolant for transferring heat from said vapors primarily into said solid coolant and thereby condensing said vapor back to the liquid state and melting said solid coolant; and

(c) returning said condensed liquid back to said reservoir for reheating and revaporizing.

4,335,782

HEAT EXCHANGER METHOD

Kenneth O. Parker, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 484,517, Jul. 1, 1974, abandoned. This application Sep. 22, 1976, Ser. No. 725,612
Int. Cl.³ F28C 13/06
U.S. Cl. 165—1 1 Claim

1. The method of controlling air flow in a heat exchanger of the counter flow type having formed tube outlet manifolds with inserts having openings communicating with a plurality of air passages of the heat exchanger core, said method comprising the steps of:

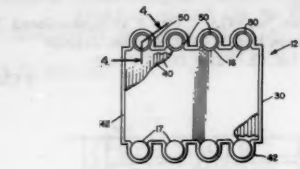
introducing air into said heat exchanger core to flow through each of said passages toward said outlet manifolds;

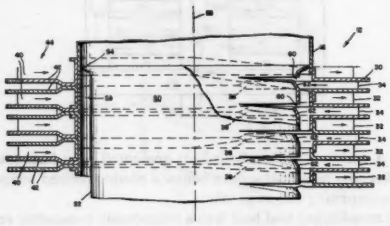
causing substantially all of the air in each manifold to flow into the openings of said manifold insert for removal from said heat exchanger;

gradually changing the flow direction of air entering the manifold inserts around louvers provided at said openings for reducing fluid pressure drop within the manifolds; and

controlling the relative sizes of said openings to overcome

undesired air flow distribution by regulating air flow through each of said heat exchanger core passages and





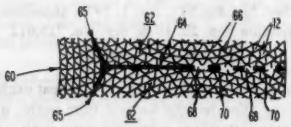
distributing air flow in a substantially uniform manner throughout the heat exchanger core.

4,335,783

METHOD FOR IMPROVING THERMAL SHOCK RESISTANCE OF HONEYCOMBED STRUCTURES FORMED FROM JOINED CELLULAR SEGMENTS

Robert D. McBrayer, Painted Post, and Vimal K. Pujari, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,775
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—8 **19 Claims**



10. A heat recovery wheel having a pair of opposing outer annular faces and a central axis therebetween, comprising:

a plurality of cellular segments adjoining one another, each of said segments having a plurality of interconnected walls forming a plurality open-ended hollow cells extending between a pair of opposing honeycombed surfaces, and further having peripheral side walls as its remaining outer surfaces;

a plurality of joints, each affixing one of said segments to another along said peripheral side walls; and

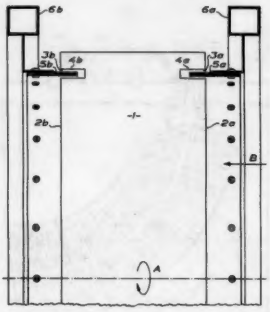
one or more discontinuities extending through one or more of said joints to said outer annular faces.

4,335,784

SEALING DEVICE IN A ROTARY REGENERATIVE TYPE HEAT EXCHANGER

Willy B. L. Arvidsson, Sven Baelters väg 24, Växjö, Sweden, and Anders S. G. Lindgren, Vikingagatan 20, Växjö, Sweden

Filed Apr. 1, 1980, Ser. No. 136,240
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—9 **1 Claim**



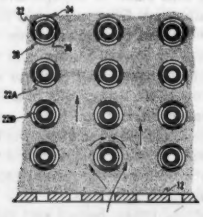
1. A sealing device in a rotary regenerative-type heat exchanger comprising a cylindrical matrix of heat-absorbent material rotatably mounted in a stationary housing; two axially extending annular grooves having bottom and side walls, one formed in each one of the end surfaces of the matrix; two stationary resilient sealing sleeves each one projecting into one of said grooves and resiliently bearing against one of the side walls of the associated annular groove under differential fluid pressure applied to one side of the sleeve; the free edge of each sealing sleeve being spaced from the bottom of the associated groove; and the width of the sealing sleeves being less than the width of the associated annular groove.

4,335,785

APPARATUS AND METHOD FOR CONTROLLING HEAT TRANSFER BETWEEN A FLUIDIZED BED AND TUBES IMMERSED THEREIN

James L. Hodges, 3 Hilltop Ave., Vernon, Conn. 06066, and Anthony E. Cerkanowicz, 8 Fieldstone Dr., Livingston, N.J. 07039

Filed Nov. 19, 1980, Ser. No. 208,141
Int. Cl.³ F28D *13/00*; F28F *13/06*
U.S. Cl. 165—39 **6 Claims**



1. In a fluid bed reactor having a fluidized bed of solid particles housed therein, the particles being suspended in a fluidizing gas flowing through the bed, and a multiplicity of horizontally disposed heat exchange tubes immersed within the bed through which a second fluid flows to accomplish the transfer of heat between the second fluid and the bed of fluidized solid particles, the tubes being disposed substantially transverse to the flow of fluidizing gas through the bed, an apparatus for controlling the rate of heat transfer between the

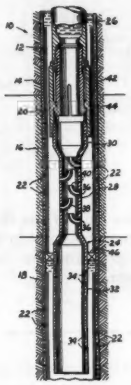
second fluid and the bed of fluidized solid particles, comprising a plurality of rotatable arcuate shields, said shields in closely spaced relationship from the immersed heat exchange tubes, and means for rotating said shields about the tubes to selectively expose various portions of the heat exchange tubes to the fluidized solid particles.

4,335,786

OIL WELL PUMPING STRING TUBULAR EXTENSION FOR INCREASING OIL TO SALT WATER RATIO

A. Glen Smith, 3801 Tinker Diagonal, Del City, Okla. 73115

Filed Mar. 23, 1978, Ser. No. 889,788
Int. Cl.³ E21B *43/18*
U.S. Cl. 166—106 3 Claims



1. In combination with a pump equipped tubing string within a casing for use in conjunction with an oil well having an upper oil producing formation and a lower salt water producing formation, the improvement comprising:

an elongated open end tube coaxially connected with the depending end of said tubing string, the tube having an elongated wall perforated reduced diameter portion intermediate its ends;

a packer surrounding said tube below its reduced diameter portion and sealing with the inside surface of said casing; and

at least two open end pipes, each pipe having one end portion secured within one of the perforations in said tube reduced diameter portion and the other open end portion of the pipe being disposed within the opening extending through a portion of the reduced diameter portion of the tube, the fluid passing from the reduced diameter portion of the tube resulting in a pressure reduction causing fluid to be drawn through the perforations in the tube and through the pipes and into the tube opening.

4,335,787

METHOD OF OIL RECOVERY WITH SURFACTANT FLOODING

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 12, 1980, Ser. No. 186,862
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 5 Claims

1. Process for hydrocarbon recovery from a subterranean formation comprising

(a) injecting a surfactant system comprising a hydrocarbon sulfonate surfactant and a nitrile cosurfactant into said formation via at least one injection well,

(b) causing the so-injected surfactant system to move from the injection well towards one or more production wells displacing hydrocarbon present in said formation,

(c) recovering displaced hydrocarbon from at least one of said production wells.

4,335,788

ACID DISSOLVABLE CEMENTS AND METHODS OF USING THE SAME

Joseph R. Murphey, and Bill M. Young, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 24, 1980, Ser. No. 114,856
Int. Cl.³ E21B *43/04, 43/08*
U.S. Cl. 166—278 67 Claims

1. A method for controlling the volume change of a cement composition in a desired location comprising the steps of:

forming a cement composition, which upon curing is rapidly dissolved in acid, said composition consisting essentially of:

water;

a metal halide or sulfate consisting essentially of at least one of magnesium, aluminum or zinc halides or sulfates and mixtures thereof;

a metal oxide consisting essentially of at least one of magnesium, aluminum or zinc oxides or mixtures thereof; and

a metal carbonate in an effective amount to control volume change of said cement composition consisting essentially of at least one of calcium or barium carbonate or mixtures thereof;

introducing said cement composition into said location to be cemented; and

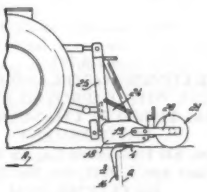
allowing said cement composition to cure into a solid mass in said location.

4,335,789

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Oct. 25, 1979, Ser. No. 88,150
Claims priority, application Netherlands, Oct. 27, 1978, 7810717
Int. Cl.³ A01B *33/06*
U.S. Cl. 172—49.5 9 Claims



1. A soil cultivating implement comprising frame means and at least one soil working member, supported on said frame means, said member being rotatable about an upwardly extending axis and comprising at least one tine, said tine having a substantially horizontal upper fastening portion connected to an elongated lower soil working portion by an intermediate curved portion, said soil working portion being generally conical in configuration and tapering downwardly to a lower end, a cavity formed at the radially innerside of said curved portion with respect to the axis of rotation of the soil working member, the outer surface of said curved portion being generally convex, said cavity extending throughout at least a major part of the upper half of said soil working portion and extending into said fastening portion, fastening means for clamping said tine to the remainder of the soil working member being located within said cavity.

4,335,790

SOIL CULTIVATING IMPLEMENTS

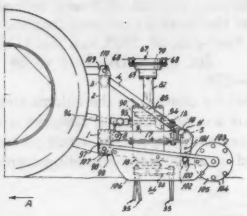
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Nov. 23, 1977, Ser. No. 854,416

Claims priority, application Netherlands, Nov. 29, 1976, 7613259

Int. Cl.³ A01B *33/06*

U.S. Cl. 172—49.5 **11 Claims**



1. A soil cultivating implement comprising a frame and a plurality of soil working members rotatably supported along the length of an elongated portion of said frame, said frame portion extending transverse to the direction of implement travel and driving means connected to rotate said members about axes defined by corresponding upwardly extending shafts that depend from said frame portion, elongated carriers being secured to the upper portion of said frame portion adjacent the top thereof, said carriers extending in the direction of travel and being spaced apart from one another, the leading ends of said carriers being connected by aligned pivots to a forward transverse beam of said frame and coupling means for connection to a prime mover being mounted on said beam, substantially centrally thereof, said pivots being located between the lateral ends of said beam and defining a single pivotal axis for said frame portion at substantially the same horizontal level as said frame portion, the trailing end of at least one of said carriers extending rearwardly of the frame portion to a rear frame beam and comprising stop means that limits the pivotal displacement of said frame portion relative to said rear beam in vertical directions, a supporting roller being pivoted to said frame with arms and means fixing said arms and roller in any one of a plurality of levels relative to said soil working members.

4,335,791

PRESSURE COMPENSATOR AND LUBRICATING RESERVOIR WITH IMPROVED RESPONSE TO SUBSTANTIAL PRESSURE CHANGES AND ADVERSE ENVIRONMENT

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Apr. 6, 1981, Ser. No. 251,208

Int. Cl.³ E21B *10/24*

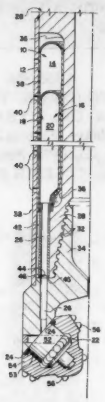
U.S. Cl. 175—228 **21 Claims**

1. An improved pressure compensating and lubricating apparatus for a seal assembly which has one face exposed to an ambient environment of substantially changing pressures, comprising:

means defining a reservoir for containing lubricant, said means defining the reservoir including an imperforate flexible reservoir wall membrane by which pressure is transmitted to lubricant within the reservoir;

an open passageway communicating lubricant between the reservoir and another face of the seal assembly which is in essentially pressure opposition to the face exposed to the ambient environment; and

means defining a hermetically sealed chamber for operatively exerting pressure on the flexible reservoir wall membrane of the lubricant containing reservoir in response to pressure variations in the ambient environment, said means defining the chamber including: an imperforate flexible chamber wall membrane exposed on one side thereof to the ambient environment of substantially changing pressures, a predetermined charge of gas hermetically contained within the interior of the chamber and



contacting the other side of the flexible chamber wall membrane, and means for transferring substantially only the pressure of the gas within the chamber to the flexible reservoir wall membrane.

4,335,792

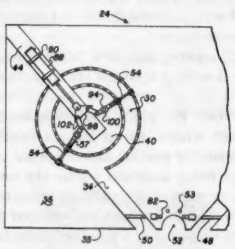
WORKING BOARD FOR DRILLING RIG

Michael S. Mahan, Rte. 2, Box 149, Colorado City, Tex. 79512

Filed Aug. 7, 1980, Ser. No. 176,095

Int. Cl.³ E21B *19/14*

U.S. Cl. 175—52 **16 Claims**



1. A platform for handling oil well pipe

a. located at a high elevation in a drilling derrick, and

b. for connecting, disconnecting and racking stands of drill pipe to and from a drill string;

wherein the improvement comprises:

c. a main floor member with an elongated feed slot extending inwardly to

d. an arcuate slot,

e. an inner platform floor with said arcuate slot supported by

f. a beam from the main floor member,

g. a mechanical latch in said elongated feed slot to allow storage and removal of said pipe in the open position and to prevent the accidental escape of the pipe when closed, and

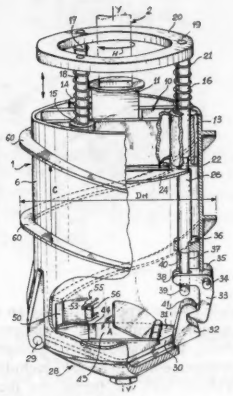
h. pipe pushers which move within said arcuate slot and mechanically move said pipe toward the elongated slot.

4,335,793

PROCESS AND APPARATUS FOR BORING SITES

Pierre G. Roblin, Paris, France, assignor to Soudure et Mecanique Appliquees du val Notre-Dame, Val d'Oise, France

PCT No. PCT/FR79/00028, § 371 Date Nov. 30, 1979, § 102(e) Date Nov. 30, 1979, PCT Pub. No. WO79/00859, PCT Pub. Date Nov. 1, 1979
PCT Filed Mar. 29, 1979, Ser. No. 177,763
Claims priority, application France, Mar. 30, 1978, 78 09298
Int. Cl.[3] E21B *10/44, 17/22, 21/00*
U.S. Cl. 175—65 33 Claims



1. A tool for boring an excavation comprising:

(a) a container adapted to receive material excavated from said excavation in an enclosed interior volume arranged within said container, said container comprising retainer means allowing said material to enter therein while not allowing said material to leave said container during normal operation; said retainer means comprising at least one opening, each of said at least one openings being blocked by a blocking element adapted to block said excavated material from leaving said container while allowing said excavated material to enter said container;

(b) emptying means for emptying the interior of said container;

(c) at least one cutting element adapted to project during excavation beyond the exterior of said container so as to excavate an excavation having transverse dimensions greater than the transverse dimensions of said container; and

(d) circulating means for circulating liquid during the boring operation from the top to the bottom of said tool outside of said container, said circulating means comprising a reserve volume provided between the exterior lateral wall of said container and the wall of said excavation or of a surface parallel thereto.

26. A process for excavating material in the presence of a liquid to form an excavation with a boring tool, said boring tool comprising a container whose cross-section is less than the cross-section of said excavation, a drive shaft extending to the exterior of said excavation, and at least one cutting element projecting out of the lateral surface of said tool, and wherein at least a portion of said cutting element is positioned at the base of said tool, whereby a reserve volume is provided between the exterior lateral surface of said container and the wall of said excavation, said tool further comprising guiding means for guiding the displacement of said liquid through said reserve volume, said guiding means being arranged on the lateral wall of said container, said process comprising the steps of:

(a) inserting said tool within said excavation; and

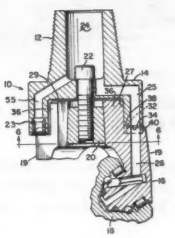
(b) rotating said shaft to rotate said tool whereby the rotational movement of said tool causes said guiding means to circulate said liquid towards the closed end of said excavation to lubricate the boring action of said tool.

4,335,794

ROTARY CONE CUTTER

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 2,945, Jan. 12, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,491
Int. Cl.[3] E21B *10/20, 10/22*
U.S. Cl. 175—337 4 Claims



1. A rotary cone cutter comprising: a pot having one end thereon for attachment to a drill string and another end having a recessed central portion bounded by a peripheral wall with downwardly facing, substantially horizontal, abutment surfaces; leg means having an upper part for nesting inside said recessed central portion of said pot; rolling cutters mounted on said leg means; said leg means comprising at least two individual leg members having upwardly facing, substantially horizontal, abutment surfaces and an upwardly extending attachment region; means for holding said legs nonrotational with said pot; and means centrally located in said pot for releasably clamping said leg members to said pot with the attachment region within the recessed central portion; and wherein said means for releasably clamping said leg members to said pot comprises a tapered plug having an outer peripheral surface, means for reciprocally moving said plug along a longitudinal center line of said central recess, said plug when moved to a first position clamping said attachment region to said peripheral wall, said plug when moved to a second position releasing said attachment region from said pot.

4,335,795

DRIVING CONTROLS FOR A VEHICLE, PARTICULARLY A TRACKED COMBAT VEHICLE

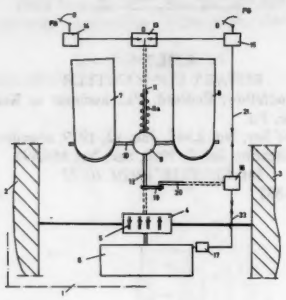
Nils Winblad, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Jan. 4, 1980, Ser. No. 109,725
Claims priority, application Sweden, Jan. 12, 1979, 7900278
Int. Cl.[3] B62D *11/00*
U.S. Cl. 180—6.2 10 Claims

1. A driving control for a vehicle having drive means at each lateral side thereof, a throttle for controlling the acceleration of said drive means, brakes for said drive means, and gearing equipment for producing a difference in speed between the drive means on one side of the vehicle and the drive means on the other side of the vehicle, said driving control comprising:

a differential unit, and two individually actuated foot pedals connected to actuate said differential unit such that said differential unit produces a sum signal indicative of the present combined actuation situation of said pedals for

controlling said throttle and said brake, and said differential unit also producing a difference signal indicative of the



difference in the actuation situation of said pedals for controlling said gearing equipment.

4,335,796

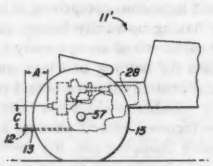
PTO REAR MOUNTING

Frank R. Smith, Mayville City, Wis., assignor to Deere & Company, Moline, Ill.

Filed Sep. 11, 1980, Ser. No. 185,840

Int. Cl.³ B60K *25/06*

U.S. Cl. 180—53 D **4 Claims**



1. In combination with a lawn and garden-size tractor including a transmission, a transmission output shaft in communication with the differential section of a transverse axle, said differential section located centrally along the longitudinal center line of said tractor, said differential sections being housed in a casing and including a plurality of geared shafts extending parallel and transversely within said casing communicating said transmission with said differential gear arrangement within said casing, said transmission having a PTO drive shaft extending therefrom, wherein the improvement comprises: a first of said geared shafts in driven communication with said transmission output shaft, a second geared shaft to be placed vertically downward of said first geared shaft, said differential gear arrangement to be horizontally removed towards the rear of said casing to allow said casing to form a recess in the rear portion of said casing; a PTO coupled to said PTO drive shaft; support means for rotatably supporting said PTO shaft, said support means being detachably mounted in said recess; gear reducing means including a PTO output tube in driven communication with said PTO shaft and detachably mounted to the back of said casing for controlling the output of said PTO tube, said PTO tube being located centrally along the longitudinal center line of said tractor for providing output rotational rate of said PTO different from the rotational rate of said PTO shaft.

4,335,797

NOISE SUPPRESSION ARRANGEMENT FOR ENGINE ENCLOSURES

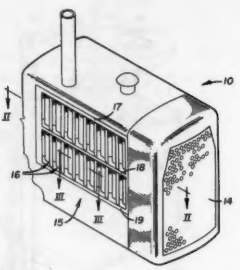
Gerald P. Simmons, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00836, § 371 Date Oct. 10, 1979, § 102(e) Date Oct. 10, 1979, PCT Pub. No. WO81/01069, PCT Pub. Date Apr. 16, 1981

PCT Filed Oct. 10, 1979, Ser. No. 95,194

Int. Cl.³ B62D *25/10;* **F01N** *7/00;* **G10K** *11/16*

U.S. Cl. 180—69 R **34 Claims**



1. In a vehicle of the type comprising an engine enclosure **(10)** having a noise suppression arrangement **(15,15*a*,15*b*)** mounted thereon, the improvement comprising said noise suppression arrangement **(15,15*a*,15*b*)** including sound attenuating means **(16,16*a*,16*b*)** for permitting the free ingress of ambient air into said enclosure **(10)** and for intercepting, reflecting and absorbing at least substantially all of the sound waves (S) emanating from within said enclosure **(10)** by at least substantially providing an optically dense view from within said enclosure **(10)** to exteriorly thereof, said sound attenuating means **(16,16*a*,16*b*)** including a spaced plurality of acoustical energy absorption means **(20,20*a*,20*b*)** for directly absorbing a substantial portion of said sound waves (S_1), and a plurality of separate sound reflecting means **(24,24*a*,24*b*)**, cooperating with and each having ends positioned outwardly from and between each adjacent spaced pair of said sound absorption means **(20,20*a*,20*b*)**, for providing an unobstructed passage **(26,26*a*,26*b*)** to permit the flow of said ambient air therethrough and for reflecting and absorbing at least substantially all of the remaining portions of said sound waves (S_2,S_3), each said acoustical energy absorption means **(20,20*a*,20*b*)** and each adjacent said reflecting means **(24,24*a*,24*b*)** being spaced and disposed in nested and overlapped relationship relative to each other so that an imaginary plane (P) at least approximately intersects each of said acoustical energy absorption means **(20,20*a*,20*b*)** and each adjacent said sound reflecting means **(24,24*a*,24*b*)**, the outwardly positioned ends of each said reflecting means **(24,24*a*,24*b*)** being spaced outwardly from a respective one of said acoustical energy absorption means **(20,20*a*,20*b*)** both in the direction of said plane (P) and transversely thereof.

4,335,798

TRACTOR

Henning Adickes, Heidelberg, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jun. 30, 1980, Ser. No. 164,799

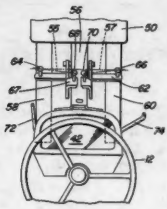
Claims priority, application United Kingdom, Jul. 27, 1979, 7926194

Int. Cl.³ B60K *37/00*

U.S. Cl. 180—90 **8 Claims**

1. A tractor having a dash, a steering wheel extending from the dash, foot pedals on either side of the bottom of the dash, a panel for covering a side of the dash and hinge means for coupling the panel to the dash and for allowing the panel to swing between a closed position and an open position, the

hinge means being disposed so that the panel engages only the hinge means while swinging between the open and closed positions, the hinge means comprising a central fore-and-aft bar at a top portion of the dash, a crossbar extending on at least one side of the central bar, a front dash hinge member on an



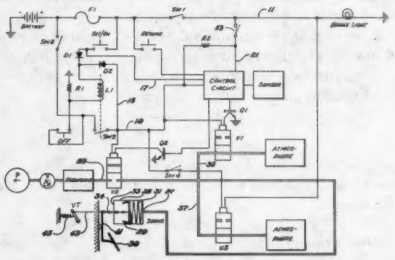
outboard portion of the crossbar and a rear dash hinge member rearwardly thereof and on the central bar above the level of the front dash hinge member, and corresponding panel hinge members on the panel for pivotally engaging the dash hinge members.

4,335,799

SPEED GOVERNOR WITH BELOW DASHBOARD SERVOMOTOR

Neal G. Shields, Fort Worth, Tex., assignor to Specific Cruise Systems, Inc., Fort Worth, Tex.

Filed Jul. 18, 1980, Ser. No. 170,113
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—175 **4 Claims**



1. In a motor vehicle having separate engine and passenger compartments, a vacuum source in the engine compartment and a throttle linkage extending from a carburetor into the passenger compartment, an improved speed governor system, comprising in combination:

servo means, mounted in the passenger compartment for pulling on the rearward end of the throttle linkage in response to varying vacuum;

a conduit extending from the vacuum source to the servo means;

a vacuum valve means mounted in the conduit in the engine compartment for selectively communicating the vacuum source with the servo means;

a vent valve means mounted in the conduit in the engine compartment for selectively communicating the conduit to atmosphere; and

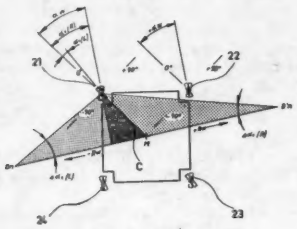
control means for selectively opening and closing the vacuum valve means and vent valve means in response to the vehicle's speed, to control the vacuum in the servo means and the speed of the vehicle.

4,335,800

VEHICLE WITH AT LEAST THREE WHEELS PIVOTING ABOUT A VERTICAL AXIS

Laszlo Arato, Seebuchtstr. 19, 6374 Buochs, Switzerland

Filed Apr. 16, 1979, Ser. No. 30,541
Claims priority, application Switzerland, Apr. 17, 1978, 4062/78
Int. Cl.³ B62D *1/00, 5/04*
U.S. Cl. 180—236 **6 Claims**



1. A steering system for a vehicle having a guide wheel and at least two other wheels, the system comprising:

means for pivotally mounting each of said wheels about a vertical axis;

means for pivoting each of said wheels to a determinable angle;

means for setting the angular position of the guide wheel;

means for determining an angular position for each of said other wheels as a function of the angular position of the guide wheel, the determinable angle being obtained from geometric relationships of triangles defined by a fixed point on the vehicle, the center of an instantaneous track curve for the vehicle and respective pivot axes of each of the wheels of the vehicle; and

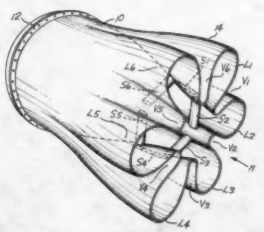
means for adjusting the angular pivoting of each of said other wheels in accordance with said determinable angle.

4,335,801

NOISE SUPPRESSING NOZZLE

Claude R. Stachowiak, Renton, and Fred R. Kunze, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 15, 1980, Ser. No. 216,285
Int. Cl.³ F01N *1/14;* F02K *1/00*
U.S. Cl. 181—213 **26 Claims**



1. A noise suppressing nozzle comprising a plurality of lobes, each lobe defining an internal passageway for hot gases flowing through the nozzle, and each pair of adjacent lobes defining between them an external passageway for ambient air, and the improvement comprising:

each lobe including a thickened sidewall section on each of its sides, with each said thickened side wall section merging into and becoming an integral part of the adjacent

thickened sidewall section of the adjoining lobe in a valley region between the lobes;

each lobe being internally reinforced by a single streamlined transverse strut, connected at its ends to the thickened sidewall sections of its lobe;

with the sidewalls of each lobe curving smoothly in the radial direction and from the vicinity of strut attachment to the thickened sidewall sections first diverging apart as they extend radially outwardly, and then converging together and eventually merging; and

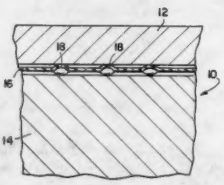
wherein the thickened sidewall sections of the lobes and the transverse struts define a ring which together with the radially curved sidewall configuration of the lobes act to adequately maintain nozzle shape and brace against exit area change without the need of additional reinforcing structure.

4,335,802

SOUND ABSORBING MATERIAL

Francis Kirschner, East Hills, N.Y., assignor to The Soundcoat Company, Inc., Brooklyn, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,956
Int. Cl.³ G10K *11/00*; B32B *5/22*
U.S. Cl. 181—290 **7 Claims**



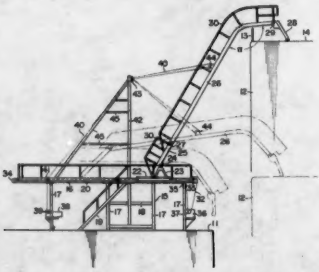
1. A multilayered sound absorbing panel which comprises an aramid cloth layer and an aramid felt layer, the fibers of both layers resisting breaking, flame, high temperature, chemical attack, abrasion, and wicking of fluids.

4,335,803

GANGWAY LADDER ARRANGEMENT

Toshimaru Sugita, Tokyo, Japan, assignor to Sugita Sangyo Kabushiki Kaisha, Japan

Filed Jun. 30, 1980, Ser. No. 164,577
Claims priority, application Japan, Jun. 29, 1979, 54-90631[U]
Int. Cl.³ E06C *5/04*
U.S. Cl. 182—12 **14 Claims**



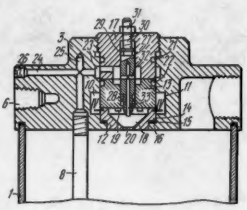
1. A gangway ladder arrangement for providing a passage between a quay and a vessel, comprising; a basement frame anchored to the quay, a truck assembly mounted on the basement frame so as to be movable toward or away from the vessel, a gangway ladder having its one end supported by the truck assembly so as to be tiltable and having its other end free and curved downwardly, said downwardly curved free ladder end resting in use on the vessel and being free to move transversely across a surface of the vessel on which it is resting, and a controller for controlling the movement of the truck assembly and the tilting movement of the gangway ladder.

4,335,804

VORTEX-TYPE OIL MIST GENERATOR

Viktor P. Bardin, ulitsa Oktyabrskaya, 17/3, kv. 43, Kolpino Leningradskoi oblasti; Evgeny A. Petrov, ulitsa Bela Kuna, 27, korpus 1, kv. 53, Leningrad; Viktor M. Rudelson, pereulok Makarenko, 3, kv. 32, Leningrad, and Jury L. Sternik, Zanevsky prospekt, 43, kv. 170, Leningrad, all of U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,040
Int. Cl.³ B05B *7/10*
U.S. Cl. 184—55 A **7 Claims**



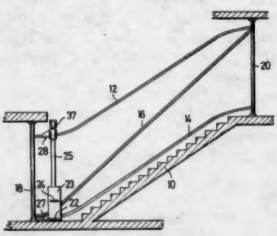
1. A vortex-type oil mist generator comprising an oil storage chamber, a vortex chamber adapted to create a rotating flow of gas and having tangentially arranged inlet openings for admitting a pressurized gas and an axial outlet opening, the ratio of the total area of said tangentially arranged inlet openings to the area of said axial outlet opening not exceeding 0.7, thus providing a suction area within said vortex chamber, and means defining an oil delivery duct having an inlet portion in communication with said oil storage chamber and an outlet portion extending into said suction area.

4,335,805

LIFT DEVICE

Gerd Grass, Talstrasse 16, 4930 Detmold 19, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,065
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914350; Nov. 20, 1979, 2946780
Int. Cl.³ B66B *9/06*
U.S. Cl. 187—12 **9 Claims**



1. A lift device for moving a load receiving device such as a platform or a seat up or down a flight of stairs, said lift device comprising:

a vertical, threaded drive spindle rotatably secured to said load receiving device and movable therewith;

spaced support rails secured along the flight of stairs for supporting and guiding said spindle and said load receiving device;

guide means extending along the stairs intermediate said support rails;

drive means for rotating said drive spindle;

and

means cooperating with said drive spindle and said guide means to cause said load receiving device to move up or down along the stairs as said drive spindle is rotated.

4,335,806

SPOT-TYPE DISC BRAKE HAVING A SIMPLE GUIDING ARRANGEMENT FOR THE CALIPER AND SHOES AT THE CARRIER

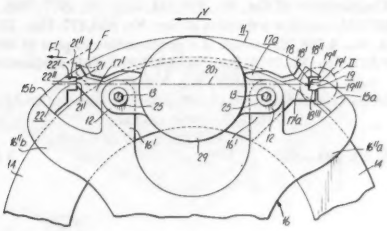
Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,691

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926818

Int. Cl.³ F16D *65/04*

U.S. Cl. 188—73.33 **67 Claims**



1. A spot-type disc brake comprising:

a brake carrier rigidly fastened to a vehicle on one side of a rotatable brake disc, said carrier having two spaced supporting sections extending parallel to a rotational axis of said disc outside the edge thereof;

a floating caliper disposed between said two supporting sections embracing said disc, said caliper carrying on one side of said disc a brake actuating unit connected to an inside brake shoe and on the other side of said disc an outside brake shoe in a non-rotatable manner, said caliper having two spaced loops disposed on opposite sides of said actuating unit and between said rotational axis and the edge of said disc, both of said inside and outside brake shoes being supported by said two supporting sections in a circumferential direction and in a radial direction toward said axis, said outside brake shoe having the leading side thereof radially outwardly confined by its associated one of said two supporting sections and the trailing side thereof radially outwardly unconfined by its associated one of said two supporting sections; and

a pair of guiding bolts each detachably secured to said carrier between said rotational axis and the edge of said disc and extending through a different one of said two loops to guide said caliper parallel to said rotational axis.

4,335,807

POWER RAIL SUPPORT APPARATUS

Earle H. Jones, Issaquah, Wash. and Alleyne C. Howell, Jr., Fairfield, Conn., assignors to The Boeing Company, Seattle, Wash.

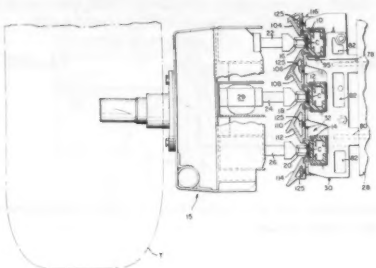
Filed Mar. 23, 1979, Ser. No. 23,520

Int. Cl.³ B60M *1/30*

U.S. Cl. 191—32 **17 Claims**

1. Apparatus for supporting multiple electrical power rails in spaced apart parallel coplanar alignment, comprising: an elongated hanger mountable by ground support means and including multiple spaced apart parallel load bearing portions projecting transversely from said hanger for respectively supporting multiple power rails in spaced apart parallel coplanar alignment; an elongated keeper securable to said hanger and including multiple spaced apart parallel retaining portions projecting transversely from said keeper for respectively retaining multiple power rails in spaced apart coplanar alignment when supported by said load bearing portions; means for securing said keeper to said hanger to support and retain multiple power rails simultaneously; multiple elongated guide members respectively positionable adjacent opposite sides of the power rails in parallel relation therewith to form ramp surfaces converging toward each power rail; and mounting means for mounting said guide members to the power rails;

wherein at least one guide member is positionable between two adjacent power rails and includes means forming two



ramp surfaces oppositely inclined toward the edges of two adjacent power rails, and at least two guide members are respectively positionable adjacent only one power rail and include means forming one ramp surface oppositely inclined toward a ramp surface formed by said one guide member; and

wherein said mounting means include an elongated mounting member positionable behind the power rails when supported and retained in spaced apart parallel coplanar alignment and including multiple mounting portions projecting between the power rails for respective load bearing connection to said guide members, and means operatively connected to said guide members for respectively securing said guide members to said mounting portions so as to clamp the power rails therebetween.

4,335,808

MULTIPLE BISCUIT CLUTCH OR BRAKE

Earl R. Johnson, Tulsa, Okla., assignor to Loffland Brothers Company, Tulsa, Okla.

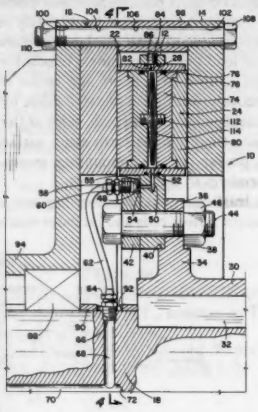
Filed Jun. 4, 1980, Ser. No. 156,278

Int. Cl.³ F16D *25/063*

U.S. Cl. 192—85 AB **9 Claims**

1. A friction apparatus adapted for installation on a rotatable shaft, and comprising hub means concentrically disposed around the shaft and secured directly thereto for rotation simultaneously therewith, a rotatable annular disc having the inner peripheral portions thereof secured directly to the hub means, a pair of annular flanges disposed outboard of the disc means and spaced slightly from the opposite sides thereof, piston means carried by the disc and operable between extended and retracted positions between the annular flanges for alternate engagement and disengagement with respect thereto, and means secured to the annular flanges for supporting

thereof independent of the disc whereby the disc and annular flanges coact simultaneously in the engaged position of the



piston means and act independently in the disengaged position of the piston means.

4,335,809

ENTERTAINMENT MACHINES

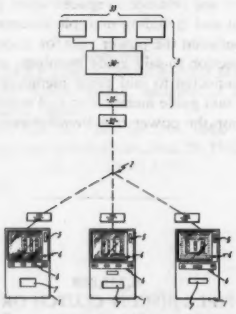
John L. Wain, Cheadle Hulme, England, assignor to Barcrest Limited, Ashton-under-Lyne, England

Filed Jan. 29, 1980, Ser. No. 116,627

Claims priority, application United Kingdom, Feb. 13, 1979, 7905068

Int. Cl.[3] G07F *13/34*

U.S. Cl. 194—1 R 9 Claims



1. An entertainment machine system comprising at least one entertainment machine and a main control device remote from said machine and connectable thereto via a remote transmission link;

said entertainment machine being of the kind which is operable by a player, after actuation of a coin or token mechanism of the machine, so as to perform a number of operations as initiated by the player and to perform further operations determined by the first said operations in accordance with a predetermined game to be played with the machine;

said entertainment machine having a control system which is arranged to respond to and effect control of said machine operations and which incorporates a processing device, and a program device containing stored program data determining the said game and operable to supply said data to the processing device;

said main control device being operable on occasions to transmit data signals via said link to said control system corresponding to different said stored program data for different said predetermined games;

the said control system further incorporating interface means connected to said program device and operable to receive said transmitted data signals, said control system being adapted to change the stored program data of said program device to different stored program data corresponding to said received data signals thereby to reprogram the machine for the playing of a different said game therewith.

4,335,810

CAPSULE TURNING APPARATUS (RANDOM SPIN PRINTING)

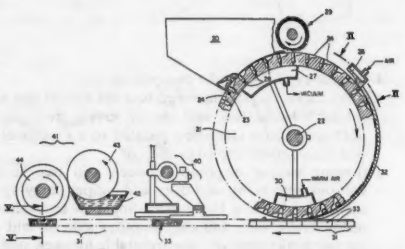
Edward M. Ackley, deceased, late of Stone Harbor, N.J.; Edward M. Ackley, executor, Stone Harbor, N.J., and James B. Ackley, executor, Cambridge, Ill., assignors to R. W. Hartnett Co., Philadelphia, Pa.

Continuation of Ser. No. 829,141, Aug. 30, 1977, Pat. No. 4,167,226, which is a division of Ser. No. 643,177, Dec. 22, 1975, Pat. No. 4,069,753, which is a continuation-in-part of Ser. No. 399,817, Sep. 24, 1973, Pat. No. 3,931,884. This application Jun. 8, 1979, Ser. No. 47,526

The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.

Int. Cl.[3] B65G *47/24*

U.S. Cl. 198—380 3 Claims



1. In a pharmaceutical capsule transporting apparatus of the type having a continuously rotatable capsule transporting cylinder having a plurality of elongated upstanding spaced apart pockets, each pocket having a radially extending portion arranged to receive and transport a capsule in an upstanding position therein, means for rotating the cylinder, a conveyor carrying a plurality of capsule carriers, and means for transferring capsules from the cylinder pockets to the capsule carriers, the combination comprising:

(a) a hopper having an opening therein, the opening located adjacent the capsule transporting cylinder to deliver capsules to the radially extending portion of each pocket;

(b) a plurality of holes, each of which extend through inner portions of the capsule transporting cylinder into the capsule pockets;

(c) a vacuum chest located adjacent to the inner surface of the cylinder and communicating with the pockets through the holes to assist in the delivery of the capsules from the hopper into the radially extending portion of each cylinder pocket in such manner that substantially an entire capsule is received in the radial portion;

(d) a perpendicular portion in each pocket being connected to the radial portion by means of a curved surface, the perpendicular portion being generally perpendicularly disposed with respect to the radial portion;

(e) fluid jet means spaced close to the transport cylinder to shift

the capsules from the radial portion of each pocket into the perpendicular portion of the pocket;

(f) wherein said pockets are arranged in a plurality of adjacent rows, each said row of pockets extending across said transporting cylinder in the axial direction thereof; and

(g) means for preventing the premature falling of said capsules out of said pockets, said meanss being located adjacent said transporting cylinder and extending circumferentially from a location proximate to said fluid jet means to a location proximate the bottom of said transporting cylinder, wherein said means for preventing premature falling of said capsules out of said pockets comprise a plurality of curved plate members, each said curved plate being located adjacent one of said rows of pockets.

4,335,811

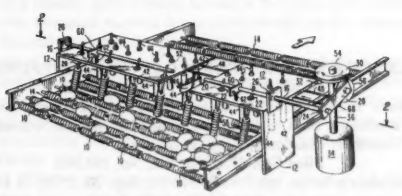
EGG ARRANGING APPARATUS

Lee H. Niederer, and Thomas O. Niederer, both of Titusville, N.J., assignors to Otto Niederer Sons, Inc., Pennington, N.J.

Filed Oct. 24, 1980, Ser. No. 200,119

Int. Cl.³ B65G *47/68*

U.S. Cl. 198—446 **16 Claims**



1. An egg arranging apparatus, usable for orienting eggs into rows from random positions upon an egg conveying device, which comprises:

(a) a housing means fixedly secured with respect to the environmental structure of the egg conveying device, said housing means extending transversely across the egg conveying device at a location thereabove;

(b) a transverse member being pivotally secured with respect to said housing means and extending transversely over the egg conveying device therebelow;

(c) a plurality of abutment members being fixedly secured with respect to said transverse member and extending downwardly therefrom to be positioned adjacent to the upper surface of the egg conveying device and positioned spaced thereabove to abut eggs traveling longitudinally therealong;

(d) an arm means fixedly secured with respect to said transverse member to be pivotally movable therewith with respect to said housing means;

(e) a cam follower member secured with respect to said arm means;

(f) a camming means being movable and positioned adjacent said cam follower member to be engaged thereby responsive to pivotal movement of said transverse member caused by said camming means including cam lobes thereon adapted to urge said cam follower member away therefrom causing pivotal movement of said transverse member and said abutment members into further abutment with the eggs located upon the egg conveyor means;

(g) a drive means operably connected to said camming means to cause movement thereof, said drive means including a drive shaft extending outwardly therefrom;

(h) a plurality of divider members secured with respect to said housing means and extending downwardly therefrom to a position immediately above the egg conveying means therebelow, said divider members being aligned longitudinally along the egg conveying means with respect to said abutment members to be adapted to contact the eggs after passage by said abutment members to thereby guide the eggs into orderly rows thereof upon the egg conveying means, said divider members including moving walls extending longitudinally therealong to minimize blockage of eggs traveling thereby;

(i) a declutching powering means operably connected to said moving walls and responsive to a predetermined excessive bias being exerted laterally against said moving walls by eggs located between said divider members to disengage and stop movement of said moving walls as long as the condition exists.

4,335,812

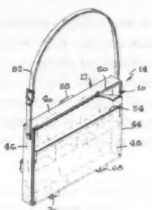
ARTIST'S SKETCH BOX TRAY AND CARRYING CASE FOR THE SAME

Thomas Koves, 645 N. Cherokee, Los Angeles, Calif. 90004

Filed May 14, 1980, Ser. No. 149,709

Int. Cl.³ B65D *1/34*

U.S. Cl. 206—1.8 **3 Claims**



1. A carrying case for an artist's sketch box tray, said carrying case comprising:

a bottom, first and second side walls and first and second end walls secured to said bottom around the edges thereof;

an openable top, said openable top having a zipper thereon and being attached to said walls by said zipper when in a closed position and being detachable by said zipper from three of said walls in the open position, said top having a double thickness over a portion thereof to define a pocket in said top;

a carrying strap attached to said ends of said carrying case for the carrying thereof;

first and second tiedown straps secured to said case and extending across the exterior of said bottom thereof, one of said straps being secured at its ends on said first and second side walls and the other of said straps being secured at its end to said first and second end walls, said tiedown straps being oriented at substantially right angles with respect to each other and being for the carrying of canvases adjacent the exterior of said bottom case;

first and second easel straps secured to said second side wall for securement of a tripod easel to the exterior of said carrying case, said bottom, walls and top enclosing a space suitable to receive an artist's sketch box tray to retain an artist's sketch box tray and its artist's materials when said top is closed, and to permit access thereto when said top is open.

4,335,813

CARTON FOR FRAGILE ARTICLES

Clifford H. Bessett, South Holland, and Theodore H. Misdom, Lansing, both of Ill., assignors to Packaging Corporation of America, Evanston, Ill.

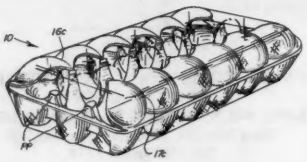
Filed May 13, 1981, Ser. No. 263,211

Int. Cl.³ B65D *65/16, 1/00*

U.S. Cl. 206—45.33 **20 Claims**

1. A molded carton for accommodating a plurality of fragile articles arranged in at least three rows disposed in substantially parallel side-by-side relation, said carton comprising a tray

section having front and rear walls interconnected to one another by end walls, the upper edges of said front and rear walls defining a common plane; and a pair of closure flaps hingedly connected to the upper edges of said front and rear walls; said tray section including rows of article-receiving cells disposed substantially parallel to and coextensive with said front and rear walls, each pair of adjacent rows of cells having a row of upright posts disposed therebetween, a predetermined



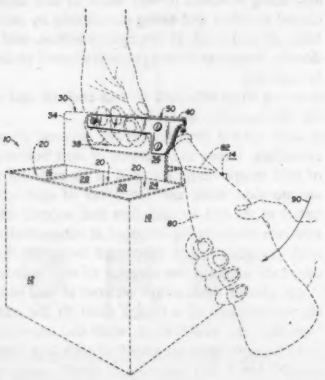
number of posts in a row extending a substantial distance above said common plane; each closure flap having an edge thereof opposite the hingedly connected portion provided with longitudinally spaced segments supportingly engaged by the upper ends of the predetermined number of posts in an adjacent row of posts when said closure flap is adjusted to a substantially cantilever close position relative to the cells in an adjacent row.

4,335,814

BOTTLE CARTON WITH INTEGRAL OPENER

Leroy J. Benning, 5012 Turner Rd., Sebastopol, Calif. 95472, and Charles A. Thorman, 1497 McGregor, Petaluma, Calif. 94952

Filed Aug. 25, 1978, Ser. No. 937,026
Int. Cl.³ B65D *75/00*; B67B *7/16*
U.S. Cl. 206—198 **5 Claims**



1. In a bottle carrying carton having a folded medial multilaminous cardboard handle lying in a normally vertical plane to define an upper folded border, the handle having a hand confronting portion, an improved bottle opener comprising:

an elongate flat shank lying substantially in the plane of the handle, the flat shank being disposed between first and second laminations of the handle, and having an upper edge captured in the fold defined by the upper folded border of the handle and abutting the fold;

the flat shank having a narrow portion extending along at least part of the length of the hand confronting portion of the handle, and a broadened shank portion protruding beyond the handle;

an overhanging hook mounted to the shank proximate the protruding portion;

the protruding portion of the shank opposing the hook to define a bearing surface;

the overhanging hook being angulated toward the handle, and the bearing surface sloping downwardly away from the hook towards the handle, wherein the axis of a bottle having a cap to be removed is downwardly angled away from the opener and the carton when a serration of the cap engages the hook and the top of the cap engages the bearing surface, cap removal being effected by rotating the bottle further downward about the region of contact between the cap and the bearing surface wherein the protruding portion of the shank is devoid of material in the region under the hook so that the bottle may be opened without interference from the shank; and

means preventing movement of the shank relative to the handle so that the carton provides a firm support for the opener during opening with the narrow portion of the shank reinforcing the handle against distortion.

4,335,815

FLEXIBLE PACKAGE FOR STORING AND DISPENSING LIQUID OR PASTY MATTERS

Pierre Babiol, Villefranche-sur-Saone, and Philippe Gallais, Bordeaux, both of France, assignors to Societe Nouvelle de Bouchons Plastiques, Anse, France

Filed Sep. 23, 1980, Ser. No. 190,002
Claims priority, application France, Sep. 26, 1979, 79 24561
Int. Cl.³ B65D *35/08, 85/14*
U.S. Cl. 206—277 **1 Claim**

1. A flexible moulded package for storing and dispensing liquid or pasty materials, the package comprising:

an elongated one-piece hollow body having a material containing skirt portion at one end, the skirt portion having a wall thickness selected to make the skirt portion flexible;

an elongated nozzle portion at the other end of the body, the nozzle portion being much smaller in diameter than the skirt portion and having an opening extending therethrough; the wall thickness of the nozzle portion being made greater than the wall thickness of the skirt to make it more rigid;

an intermediate joining portion interposed between the nozzle portion and the skirt portion and connecting them together along a curved walls of increasing diameter, the wall thickness of the intermediate joining portion tapering from the thickness of the nozzle wall portion to the thickness of the skirt wall portion; and

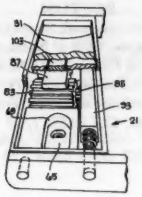
the skirt portion at its end opposite the joining portion being flattened and sealed along a rectilinear edge causing deformation of the skirt portion to form two opposed symetrical swells, such that when one swell is pressed toward the other it passes through a position of unstable equilibrium and lies concavely within the opposite swell in stable equilibrium.

4,335,816

LATCH ASSEMBLY FOR DISK PACK HANDLE AND THE LIKE

Edgar A. Rager, 601 Almarida Dr., Apt. T6, Campbell, Calif. 95008

Filed Jul. 2, 1980, Ser. No. 165,290
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—444 10 Claims



1. A latch assembly for a handle used on a disk pack or similar article comprising,

an elongate housing rotatably hinged between opposed arms of a handle, said housing having a movable slider exteriorly mounted thereon for motion parallel to the elongate dimension of said housing,

a pair of opposed movable dogs mounted in a channel in said housing for slidable motion therein in opposite directions, parallel to the direction of motion of the slider, said channel terminating in opposed apertures in said housing communicating with similar apertures in opposite arms of a handle, and

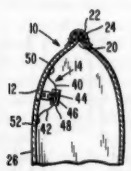
rack and pinion means connected to said slider and to said dogs for urging said dogs outwardly into said apertures thereby locking said housing to said handle.

4,335,817

EASY OPENABLE AND CLOSABLE BAG WITH SLIDE FASTENER

Karl E. Bahr, Meadville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Feb. 6, 1980, Ser. No. 119,056
Int. Cl.³ B65D *17/00*
U.S. Cl. 206—610 4 Claims



1. A reclosable bag comprising

a bag having a top opening, means for closing the top opening, and a sidewall,

said bag also having elongated closed opening means including a closed tear strip formed in the sidewall and adapted to be permanently opened, and

a slide fastener having a pair of support tapes and a pair of rows of interlocking coupling elements extending from inner edges of the respective support tapes,

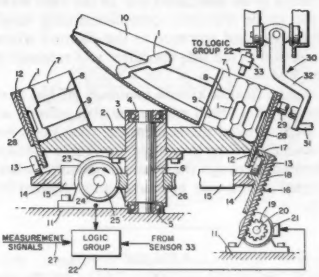
said support tapes being secured to the sidewall on respective opposite sides of the tear strip for forming a closure for the opening means after the tear strip has been opened.

4,335,818

APPARATUS FOR SORTING WORKPIECES OF DIFFERENT CLASSIFICATION CLASSES AND FOR FORMING GROUPS HAVING PRE-SET NUMBER OF WORKPIECES OF THE SAME CLASS

Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs, S.p.A., S. Marino di Bentivoglio (BO), Italy

Continuation-in-part of Ser. No. 18,668, Mar. 8, 1979, abandoned. This application Apr. 22, 1980, Ser. No. 142,709
Claims priority, application Italy, Mar. 10, 1978, 3355 A/78
Int. Cl.³ B07C *5/16*
U.S. Cl. 209—592 9 Claims



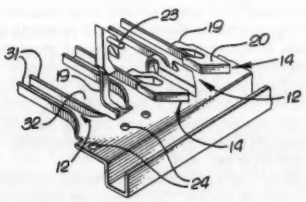
1. An apparatus for sorting workpieces of different classification classes and for forming groups having a pre-set number of workpieces of the same class, comprising a base; a housing support mobile on the base having a number of partitions at least equal to the number of classes; a loading device for loading one workpiece at a time into the support partition when in a determined loading and unloading position with respect to the support; a control group receiving signals indicative of the class of the workpiece; a control device for operating the housing support, the control device being connected to the control group for positioning in the loading and unloading position a relevant partition provided for receiving the workpieces of the same class of the next workpiece to be loaded; an unloading device arranged in correspondence with the loading position; and a driving device for operating the unloading device, the driving device being connected to the control group and including enabling means for controlling the unloading at the completion of a group of workpieces of the same class relating to the partition located in the loading and unloading position.

4,335,819

CARD CAGE ENTRY GUIDE

Arnold Weisman, 325 Crestglen Rd., Glendora, Calif. 91740, and Mitchell Merritt, 5594 Temple City Blvd., Temple City, Calif. 91780

Filed Jul. 14, 1980, Ser. No. 167,811
Int. Cl.³ H05K *7/14*
U.S. Cl. 211—41 10 Claims



5. For use with a card cage having first and second channels

directly opposite each other and on the interior of first and second cage sides respectively, the channels configured to form a slot for retaining a card on opposite edges, each of the first and second cage sides having openings on both sides of its channel, and further having a pair of apertures through the side positioned in front of the associated channel, the aperture pairs separated by more than the width of the card, a guide device for use with a channel comprising:

a base member, having a pair of apertures similarly spaced apart as the pair of cage side apertures;

a pair of guide members, each having a peg, each peg configured to position its guide member in front of the channel by being inserted through one of the associated side apertures and retained in an associated one of the base member apertures, the guide members complimentarily configured to present a V-shaped entrance to the channel when the pegs are so inserted in the side apertures and retained in the base member; and

first and second flexible ribbon members affixed at one end to the base member, each ribbon member affixed at its other end to an associated guide member, the ribbon members of length and flexibility to couple the guide members to the base members through the channel openings when the pegs are inserted in the side apertures and retained in the base member.

4,335,820

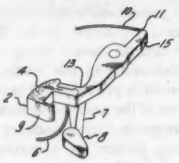
MAGNETICALLY-AUTOMATED UNCOUPLING SYSTEM FOR MODEL RAILROADS

Robert E. Gramera, 10420 W. 44th Ave., Apt. 2A, Wheatridge, Colo. 80033

Continuation of Ser. No. 933,420, Aug. 14, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,301

Int. Cl.³ B61G *3/00*; A63H *19/18*

U.S. Cl. 213—75 TC **4 Claims**



1. In a magnetically-actuated uncoupling system for model railroads including (A) a coupler pocket housing of a model car and a draw bar member having means at one point for swingably connecting to the coupler housing, (B) at the other end of said draw bar, an inwardly directed hook on one side, (C) a spring urging said draw bar in the direction laterally outward from said car, (D) a curved magnetic member secured to and extending downwardly and outwardly of said draw bar in a direction opposite said hook and adapted to be attracted by a permanent magnet positioned alongside the outside of a section of train track, whereby, when a pair of adjacent cars coupled by said couplers being in a complimentary hooking engagement are pushed to a position in alignment with a pair of opposed magnets positioned alongside the outside of a section of train track said hook portions will be moved into relatively unhooked engagement to allow outward swinging and uncoupling of said couplers upon the outward attraction of said magnetic members in the direction of their respective magnets, the improvement for delayed uncoupling which comprises:

(a) said draw bar having a knuckle (**4**) being defined by the outer end of said draw bar and having face (**9**);

(b) a bypass (**8**) mounted on a post (**7**) extending downward from the draw bar; and

(c) a stopping block (**25**) connected to and extending downward from the front of the coupler pocket housing of the car and in alignment with the bypass (**8**) on the draw bar of a companion coupler when the draw bar is in a full open position, whereby, when a pair of draw bars of adjacent cars are in an unhooked full open position, the bypass (**8**) of each car engages the stopping block (**25**) of the adjacent car as the cars are pushed to a desired point outside the magnetic field for delayed uncoupling.

4,335,821

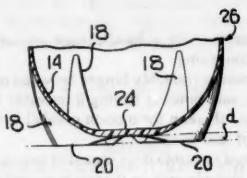
BLOW MOLDED PLASTIC MATERIAL BOTTLE BOTTOM

Wayne N. Collette, Westmoreland; Suppayan M. Krishnakumar, and Gautam K. Mahajan, both of Nashua, all of N.H., assignors to The Continental Group, Inc., New York, N.Y.

Division of Ser. No. 54,500, Jul. 3, 1979, Pat. No. 4,267,144. This application Nov. 4, 1980, Ser. No. 203,924

Int. Cl.³ B65D *1/02*

U.S. Cl. 215—1 C **3 Claims**



1. A blow molded plastic material bottle bottom structure comprising a generally hemispherical outwardly convex bottom wall interrupted by a plurality of downwardly projecting wall portions defining hollow legs terminating in lower feet; said bottom wall having a lower polar portion of a smoothly continuous configuration and upwardly offset from and directly joined to said hemispherical configuration.

4,335,822

TRANSPORT AND EMPTYING CONTAINER

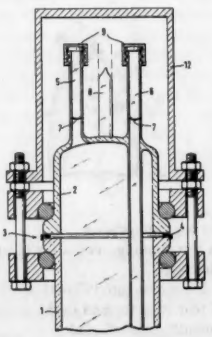
Werner Büttner, Darmstadt, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,592

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951667

Int. Cl.³ B65D *47/02*

U.S. Cl. 215—12 R **11 Claims**



1. A container for transporting and emptying very pure chemicals capable of reacting with constituents of the atmosphere, said container comprising:

a lower part closed main body having an opening at the top;

an upper part adapted for being connected to said lower part

at said opening for being in communication therewith and said upper part being closed at the top;

first connecting tube means and second connecting tube means extending through the top of said upper part into said container; and

flange means located for connecting said upper and lower parts at said flange means, said flange means having gasket means positioned between said flange means and said upper and lower parts respectively.

4,335,823

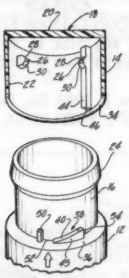
CHILD-RESISTANT PACKAGE

Gary V. Montgomery, and Randall G. Bush, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Jan. 26, 1981, Ser. No. 228,286

Int. Cl.³ A61J *1/00*; B65D *55/02*

U.S. Cl. 215—206 **11 Claims**



1. A child-resistant package comprising: a container having a body and a tubular open-ended neck joined to said body, a cup-shaped closure for said neck having an annular skirt adapted to telescope over said neck, retainer means on said neck and said skirt for retaining said closure in closed position on said neck during relative rotation of said closure and said container, said retainer means being disengageable by axial movement of said closure relative to said neck,

a pair of elements on the outer surface of said neck and the inner surface of said skirt, respectively, said elements having a radial thickness such that they do not engage when said closure is rotated on said neck with said skirt in its normal annular configuration,

a first of said elements having a ramp surface extending angularly and circumferentially an axial distance greater than the distance of axial movement required to disengage said retainer means, a second of said elements being positioned at an axial level for engagement with said ramp surface of said first of said elements when said skirt is flexed radially inwardly and said closure is rotated to cause said closure to move axially to disengage said retainer means, and

a guard element formed on the same surface as said first of said elements and spaced therefrom a circumferential distance only enough to provide a keyway for the radial insertion of the second of said elements therein.

4,335,824

CHILD-RESISTANT TAMPER INDICATING PACKAGE

Randall G. Bush, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Mar. 9, 1981, Ser. No. 241,735

Int. Cl.³ G65D *55/02*

U.S. Cl. 215—224 **12 Claims**

1. A child-resistant, tamper indicating package comprising:

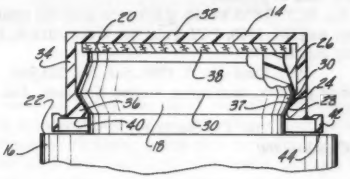
a hollow container having a body portion and a tubular neck extending from said body and forming an annular shoulder at the juncture of said body and neck, said neck forming an opening communicating with said container,

an annular rib formed on the exterior of said neck and having opposed upper and lower surfaces,

a closure having a disc portion for engaging and closing the opening in said neck and a cylindrical flexible skirt extending from said disc portion,

said skirt terminating in a lip axially spaced from said shoulder a predetermined distance when said cap is in a closed position to receive a tool for prying said cap from said container,

an annular flange formed within said cap on said skirt adjacent to said lip and having an inside diameter less than the



outside diameter of said rib, said flange having a surface engageable with the lower surface of said rib to hold said cap in sealing engagement on said neck and resist removal of said cap, said flange being engageable with said upper surface of said rib to deflect said flexible skirt during closing movement of said cap axially on said neck,

an annular ring formed as a unit with said skirt and having a lower edge extending axially into close proximity to said shoulder to prevent insertion of a tool and to conceal the tool receiving space between said lip and said shoulder, and

a line of weakening between said ring and said skirt permitting removal of at least a portion of said ring and access to said tool receiving space.

4,335,825

RESERVOIR TANK

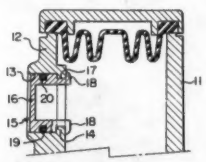
Takeshi Sakazume, Kawasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jul. 21, 1980, Ser. No. 170,877

Claims priority, application Japan, Jul. 20, 1979, 54/100267[U]

Int. Cl.³ B65D *25/54, 25/56*; G01F *23/02*

U.S. Cl. 220—82 R **3 Claims**



1. A reservoir tank having:

a side wall, said side wall having an opening therethrough with a flange projecting thereinto around the inner periphery thereof;

a transparent window sealingly mounted within said opening, said transparent window comprising a cup-shaped member having an open end portion and a bottom portion;

said bottom portion being transparent for allowing the visual inspection of the liquid level of said reservoir tank;

said open end portion having a plurality of resilient pawl-

shaped retaining members spaced around the periphery thereof; and

said resilient retaining members having a flange engaging recess therein having the same dimension along said member as the thickness of said flange and being adjacent said open end whereby said members resiliently and snappingly engage said flange on the peripheral edge of said opening and tightly hold said cup-shaped member against the surface of said flange within said opening.

4,335,826

RELEASE DEVICE FOR A CONTAINER

Henry M. Prain, 27, Steeles Rd., London NW3, and Andrew M. Scott, Holmfield, Rollestone Rd., Shrewton, Salisbury, Wiltshire, both of England

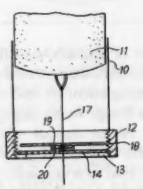
PCT No. PCT/GB80/00005, § 371 Date Aug. 26, 1980, § 102(e) Date Aug. 26, 1980, PCT Pub. No. WO80/01375, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 9, 1980, Ser. No. 205,961

Claims priority, application United Kingdom, Jan. 9, 1979, 7900708

Int. Cl.³ B65D *17/50, 41/02*

U.S. Cl. 220—260 **7 Claims**



1. A container having a release device comprising a resilient closure member and a line, the line being attached to contents of the container and passing through said closure member, the container having an aperture therein at the edge of which is provided retaining means, and the closure member being arranged to be retained by said retaining means to obstruct said aperture, wherein upon the application by said line of a predetermined force to a central region of the closure member, the closure member is caused to flex by the contents and separates from said aperature.

4,335,827

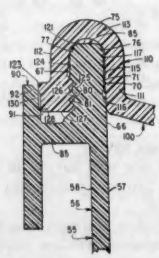
CAN OR CONTAINER AND LID THEREFOR

Elmer J. Knize, Chicago, and Daniel C. Avers, Oak Park, both of Ill., assignors to Lippy Can Company, Ltd., Oak Park, Ill.

Continuation-in-part of Ser. No. 79,712, Sep. 28, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,946

Int. Cl.³ B65D *17/52, 43/26, 41/16*

U.S. Cl. 220—284 **24 Claims**



1. A container having a body with a closed bottom and a top edge defining an open top, interrupted retaining members exterior to and laterally spaced from said top edge, a plurality of spaced apart grooves in the exterior surface of said body near and parallel to said top edge forming a first set of teeth, a removeable cover for closing the open top having an inverted U-shaped clamping member with an interior leg and an exterior leg and a bight spanning said top edge, said interior leg and said bight when said cover is in place closing the open top being in contact respectively with the interior surface of said body and said top edge, the surface of said exterior leg facing said container body having a plurality of spaced apart grooves therein forming a second set of teeth for interlocking relationship with said first set of teeth, the other surface of said exterior leg being in contact with at least some of said interrupted retaining members; whereby said interlocking sets of teeth provide positive stops and seal for said cover and said body and said retaining members maintain said sets of teeth in contact.

4,335,828

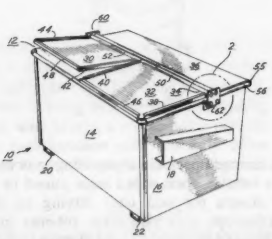
REFUSE CONTAINER LID SYSTEM

Jimmie R. Robinson, and Max E. Thompson, both of Silver Lake, Ind., assignors to Flint & Walling, Inc., Silver Lake, Ind.

Filed Sep. 5, 1980, Ser. No. 184,275

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—334 **6 Claims**



1. A refuse container lid system comprising a pair of covers disposed adjacent each other on the top of the container and having tubular portions along the back in an end to end relationship, hinge plates disposed along the outer edge of each of said covers near the ends of said tubular portions, a pipe disposed in said tubular portions and extending between said covers, means for attaching said plates to the container, studs in said hinge plates extending into opposite ends of said pipe and being sufficiently smaller than the hole in said pipe that said cover can rotate about said studs relative to said plates, a top plate disposed on the top of the container along the rear thereof, and having a tubular portion adjacent said tubular portion of said covers, and studs from said hinge plates extending into opposite ends of the tubular portion of said rear top plate.

4,335,829

COATED METAL SURFACES AND METHOD OF COATING METAL SURFACES WITH AQUEOUS RESINOUS DISPERSIONS OF EPOXY RESINS AND ACRYLIC POLYMERS

Roger M. Christenson, Gibsonia; Rudolf Maska, Pittsburgh; Rostyslaw Dowbenko, and Thomas R. Hockswender, both of Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1978, Ser. No. 964,549

Int. Cl.³ B65D *8/00;* B05D *3/02;* B32B *15/08, 27/38*

U.S. Cl. 220—458 **12 Claims**

1. A method of coating metal surfaces which comprises:

(I) applying to the metal surface a coating composition

comprising an aqueous base-solubilized resinous dispersion in which the resinous phase comprises:

(A) 15 to 90 percent by weight of a base-solubilized acrylic polymer which is formed by solution polymerizing in the absence of primary and secondary alcohols other than ethanol, the following monomer charge:

(1) 15 to 85 percent by weight of an alpha, beta-ethylenically unsaturated carboxylic acid,

(2) 5 to 85 percent by weight of N-ethoxymethylacrylamide or N-ethoxymethylmethacrylamide,

(3) 0 to 80 percent by weight of a copolymerizable vinyl monomer different from (1) and (2); the percentages by weight of (1), (2) and (3) being based on total weight of (1), (2) and (3);

(B) 10 to 85 percent by weight of an epoxy resin; the percentages by weight of (A) and (B) being based on total weight of (A) and (B);

(II) heating the metal surface to a temperature sufficient to coalesce and cure said coating composition.

10. A metal substrate coated by the method of claim **1**.

11. The metal substrate of claim **10** which is in the form of a metal container and in which the resinous dispersion is applied to the container's interior surface.

4,335,830

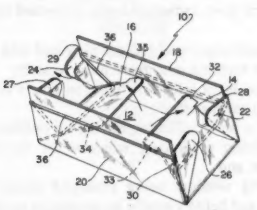
SOLUTION CONTAINER

Richard S. Garganese, North Kingston, R.I., assignor to Industrial Packaging Co., Inc., Bristol, R.I.

Filed Nov. 17, 1980, Ser. No. 208,133

Int. Cl.³ B65D *5/30, 5/56*

U.S. Cl. 220—462 **5 Claims**



1. A collapsible container comprising:

A. a flat bottom wall;

B. a pair of spaced side walls, each of which is hingedly attached to said bottom wall on opposing edges thereof;

C. a pair of spaced end walls, each of which is hingedly attached to said bottom wall on opposing edges thereof, said side and end walls being pivotally movable relative to said bottom wall for location in perpendicular relation with respect thereto when the container walls are moved from a collapsed to an erected position;

D. means formed on said side and end walls for interlocking said side and end walls in the erected positions thereof; and

E. a resilient band extending along the outer surfaces of said side walls and the inner surfaces of said end walls, and coacting with said side and end walls to normally urge them to the erected positions thereof, said resilient band being movable into a position relative to all of said walls to automatically urge said walls from a collapsed to an erected position.

4,335,831

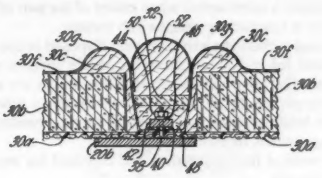
INSULATED CRYOGENIC LIQUID CONTAINER

William A. Swaney, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 16, 1978, Ser. No. 869,544

Int. Cl.³ B65D *87/24*

U.S. Cl. 220—901 **8 Claims**



1. An insulated cryogenic liquid container comprising a supporting enclosure having a generally planar inner surface, a pair of composite insulating panels each including a generally rectangular glass fiber reinforced resin casing having a front panel portion and four sidewall portions and insulating material in the casing, the panels being mounted adjacent each other on the inner surface with space between the casings thereof, and a straight glass fiber reinforced resin joint cover member disposed in the space between the casings, the joint cover member having a generally U-shaped cross section opening toward the inner surface with a pair of opposite leg portions adhesively secured in overlapping relationship respectively to adjacent sidewall portions of the casings, the front panel portions of the casings and the joint cover member forming a portion of a primary barrier for directly contacting cryogenic liquid when the container is in use.

4,335,832

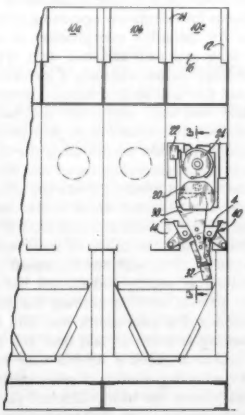
CROSS LINK MECHANISM FOR STAGGERED STACK VENDING MACHINE

Harry R. Payne, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed May 21, 1980, Ser. No. 151,850

Int. Cl.³ G07F *11/08*

U.S. Cl. 221—67 **1 Claim**



1. Apparatus for dispensing a single article at a time from at least two adjacent staggered stacks of articles in a bin with

corresponding articles in the stack being axially aligned of each other, said apparatus comprising:

(a) a selectively energizable motor;

(b) a cam energizably engageable with said motor, said cam having a surface with a pair of surface cutouts therein;

(c) a stem secured to said cam and rotatable therewith, said stem having an arm with a pin thereon;

(d) switch means disposed to be engaged by the surface of said cam and responsive thereto, wherein energization of said motor is interrupted when either of the pair of surface cutouts is reached by said switch means;

(e) first and second support members disposed in the bin and mounted for movement from an article support position wherein the lowermost articles of the stacks are engaged and supported, to an article release position wherein an article from each stack is released for dispensement;

(f) linkage means including

(1) a vertical link secured to and directed for movement by the pin,

(2) a cross link pivotally secured at its centermost portion to said vertical link,

(3) a pair of support links, one of said pair of support links being pivotally secured to said cross link at one end thereof and said first support member, the other of said pair of support links being pivotally secured to said cross link at the other end thereof and said second support member,

so that pin directed movement of said vertical link results in movement producing force being applied through said cross link and said pair of support links to said first and second support members,

(g) a latch plate pivotably mounted for movement from a rest position wherein said latch plate engages and holds said first and second support members in their article support position, to either a first position wherein said latch plate engages said first support member to prevent its movement to its article release position, or a second position wherein said latch plate engages said second support member to prevent its movement to its article release position;

(h) releasable lock means adapted to be engaged by the arm for disposition from a locked position wherein said latch plate is retained in rest position to an unlocked position wherein said latch plate is disposed to either its first or second position;

(i) an escrow bar rigidly secured to said latch plate and pivotal therewith from a rest position where it retains one of the two articles released by one of said first and second support members, to a release position;

(j) control means for selectively operating said motor including means for initiating energization of said motor to rotatably drive said cam and said stem, whereby the pin directed linkage means transmits a movement producing force on said first and second support members while the arm engages said lock means for disposition to its unlocked position wherein said latch plate pivots to either its first or second position overcoming the movement producing force and maintaining one of said support members in its article support position while the other of said support members is directed to its article release position whereupon said latch plate and said escrow bar enter their locked position and the other of said support members releases a pair of cans, with one dispensed to the operator and the other retained by said escrow bar and thereafter one of the pair of surface cutouts reaches said switch means de-energizing said motor and said control means and terminating rotation of said cam and said stem, said initiating means initiated a second time energizing said motor and continuing rotation of said cam and said stem to dispose said escrow bar to its unlocked position whereby dispensing the retained can, and upon reaching the second of the pair of surface cutouts de-energizing said motor and said control means and terminating rotation of said cam and said stem.

4,335,833

SOAP SOLUTION DISPENSER

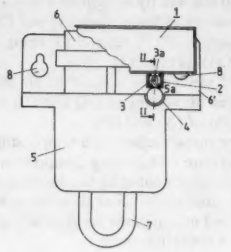
Sandro Arabian, Vaduz, Liechtenstein, assignor to Europtool Trust, Vaduz, Liechtenstein

Filed Jun. 30, 1980, Ser. No. 164,187

Claims priority, application Switzerland, Jul. 17, 1979, 6623/79

Int. Cl.³ B67D *5/22*

U.S. Cl. 222—23 **4 Claims**



1. A soap solution dispenser comprising:

a housing;

an exchangeable refill cartridge for dispensing aqueous soap solution arranged in said housing;

means for emptying aqueous soap solution from said refill cartridge;

level indicator means for indicating the level of the soap solution in said refill cartridge;

means for producing portions of soap foam from said soap solution;

said refill cartridge having a connecting member which is at least in part elastic;

at least one hollow plug having a bore provided for said means for emptying said refill cartridge;

said solution level indicator being provided for said hollow plug;

said refill cartridge, said hollow plug and said solution level indicator forming communicating vessels;

said solution level indicator being in direct communication with said refill cartridge;

said solution level indicator having an outflow opening;

means defining a viewing window for the solution level indicator; and

said viewing window being arranged above said outflow opening and being visually accessible to an observer of the solution dispenser.

4,335,834

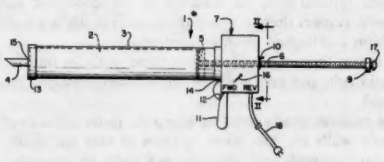
HAND HELD ELECTRIC EJECTING DEVICE

Marvin Zepkin, 366 Bobwhite Dr., Bird Key, Sarasota, Fla. 33577

Filed Jun. 30, 1980, Ser. No. 164,816

Int. Cl.³ B67D *5/46*

U.S. Cl. 222—63 **16 Claims**



1. A hand held electric ejecting device for ejecting material from a cartridge comprising in combination, receptacle means

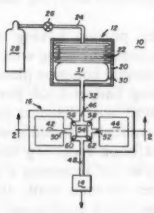
for receiving therein a cartridge containing a material to be ejected, said cartridge having a dispensing opening at one end and being adapted to receive a pusher means at the other end for forcing the material in the cartridge through the dispensing opening; pusher means movable when driven through said cartridge from said other end to force the material in the cartridge through said dispensing opening, said pusher means including a push rod formed as a screw shaft; and an electric motor positioned adjacent one end of said receptacle means and directly connected to said receptacle means, said screw shaft passing through an armature shaft of the electric motor, threads being provided on said armature shaft in driving engagement with said screw shaft for axially driving said screw shaft for effecting movement of the pusher means to force material through the dispensing opening of the cartridge, whereby said device is relatively lightweight, slim, compact and easy to use.

4,335,835

DEVICE FOR THE INTRAVENOUS OR ENTERIC INFUSION OF LIQUIDS INTO THE HUMAN BODY AT A PREDETERMINED CONSTANT RATE

Myron A. Beigler, Los Altos Hills, and Hal C. Danby, Palo Alto, both of Calif., assignors to Anatros Corporation, San Jose, Calif.

Division of Ser. No. 972,730, Dec. 26, 1978, Pat. No. 4,237,881.
This application Jun. 20, 1980, Ser. No. 161,330
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—95 **10 Claims**



1. A disposable, unitary, hermetically sealed liquid container structure comprising:

a flexible container portion having a selected volumetric capacity and an exit port;

a pair of substantially identical, flexible, liquid bladders each having a volumetric capacity at least one order of magnitude smaller than the volumetric capacity of said container;

a liquid discharge meanscapacity and an exit port;

a pair of substantially identical, flexible, liquid bladders each having a volumetric capacity at least one order of magnitude smaller than the volumetric capacity of said container;

a liquid discharge meanscapacity and an exit port;

a pair of substantially identical, flexible, liquid bladders each having a volumetric capacity at least one order of magnitude smaller than the volumetric capacity of said container;

a liquid discharge means; and

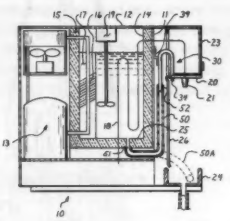
a liquid distribution network integrally connecting said container, said bladders and said discharge means to one another.

4,335,836

BEVERAGE DISPENSER HAVING AN IMPROVED LEVEL CONTROL FOR A LIQUID HEAT EXCHANGE MEDIUM

William A. Harvill, Stone Mountain, Ga., assignor to The Cornelius Company, Anoka, Minn.

Filed Mar. 3, 1980, Ser. No. 126,931
Int. Cl.³ B67D *1/16*
U.S. Cl. 222—108 **4 Claims**



1. In a beverage dispenser having a beverage ingredient cooling tank for containing a liquid heat exchange medium, a dispensing nozzle, a generally horizontal nozzle plate which is mounted to the dispenser and which supports the nozzle, and a common drip tray under both of the nozzle and the first conduit outlet, an improved medium level control and drain comprising

a. a first medium conduit having an inverted U-shape, said conduit being positioned with respect to the tank so that an apex of the conduit is substantially at the height of a desired medium level within the tank, said conduit having an inlet and an outlet;

b. a second medium conduit comprising a flexible length of tubing having an inlet end fluidly connected to a bottom of the tank and an outlet end normally fluidly connected to the inlet of the first conduit, the outlet of said second conduit being disconnectible from the first conduit and lowerable to a position at or below the level of the tank bottom for draining of the tank; and in which

c. said first conduit has an outlet leg spaced laterally from the nozzle and in registry with an aperture in the nozzle plate, and an inlet leg of longer length than the outlet leg, said inlet leg extending substantially below and being rearward of the nozzle plate with the connection of the second conduit to the first conduit inlet being at a level below the level of the nozzle plate.

4,335,837

DISPENSING CONTAINER FOR PROPORTIONAL MIXING OF FLUIDS

Robert P. Bono, 518 Parker Ave., Monrovia, Calif. 91016

Filed Oct. 4, 1979, Ser. No. 81,773
Int. Cl.³ B67D *5/42*; G01F *11/02*
U.S. Cl. 222—137 **7 Claims**

1. A hand-held liquid dispenser for dispensing a plurality of intermixed liquids separately stored therein comprising:

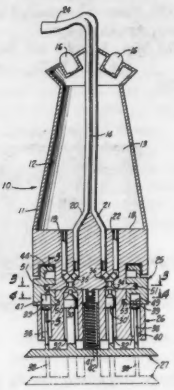
a container sized to be grasped in the user's hand and provided with a plurality of separate storage chambers;

a liquid mixing and dispensing nozzle fixed immovably to said container having a single outlet and a plurality of inlets in communication with said outlet;

a supporting base for said container reciprocable axially thereof and normally spring biased to an extended position to support said container and its contents elevated above said base; and

said supporting base including manually reciprocable piston means in communication with a respective one of said storage chambers operable upon the retraction thereof in opposition to said spring to transfer separate charges of liquid from a respective one of said storage chambers to

said nozzle and to intermix and dispense the same through said single outlet, and operable upon the reverse movement thereof by said spring to withdraw replenishment



charges of liquid from an associated one of said storage chambers in readiness for transfer of said charges to said nozzle upon the next retraction movement of said piston means.

4,335,838

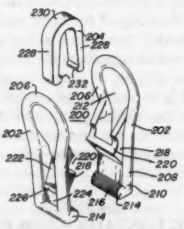
SKIRT AND TROUSER CLIP FOR HANGER

Leonard Bisk, Elkins Park, and Gunther Rogahn, Lansdale, both of Pa., assignors to Independent Products Company, Inc., Lansdale, Pa.

Filed Apr. 7, 1980, Ser. No. 137,930

Int. Cl.³ A47J *51/095, 51/14;* **D06F** *35/02*

U.S. Cl. 223—91 **6 Claims**



1. A clip arranged for ready assembly and releasable securement on a rod-like element of a first predetermined diameter and having a longitudinal axis, said clip comprising a pair of jaws formed of a first plastic material and resilient bias means formed of polycarbonate and having higher tensile strength and resiliency than said first material, each of said jaws being a generally planar member and comprising an elongated first end portion defining a finger grasping opening, an intermediate portion, and a second end portion including a projection extending at an angle to the plane of said jaw member, said intermediate portion including an arcuate recess therein for close receipt of a portion of the periphery of said rod-like element when said clip is assembled thereon, said bias means being a generally U-shaped member having a pair of outwardly flared legs each terminating in a free end and an arcuate intermediate portion defining a recess having a first predetermined diameter, the free ends of said bias means being spaced apart by a distance greater than the diameter of said recess to enable said bias means to be readily secured to said jaws, with each of said legs overlying and engaging a respective one of said jaws adjacent said intermediate portion and with the recess in said arcuate portion coacting with the recess in each of said jaws to form a substantially circular opening closely receiving a portion of said rod-like member therein to complete the assembly of said clip by holding said jaws on said rod-like member and whereupon said clip can be readily slid therealong and pivoted thereabout with said rod-like element acting as a fulcrum.

4,335,839

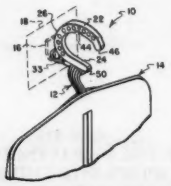
COAT HANGER CARRIER

Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512, and Ronald N. Kessler, 1161 Monsell Dr., Youngstown, Ohio 44505

Continuation-in-part of Ser. No. 76,191, Sep. 17, 1979, Pat. No. 4,299,342. This application Apr. 3, 1980, Ser. No. 136,904

Int. Cl.³ A45C *13/26*

U.S. Cl. 294—142 **12 Claims**



1. A carrier for releasably receiving, retaining, carrying and hanging hanger hook portions of a plurality of coat hangers comprising:

(a) a substantially C-shaped member having upper and lower leg portions which overlie each other and which extend substantially in a common plane;

(b) the upper leg portion being of a sufficient size relative to the size of one's hand to effectively distribute the load of a plurality of garment-carrying hangers across the width of one's hand;

(c) the lower leg portion having hanger-hook receiving means for defining an opening which extends substantially perpendicular to said common plane for releasably receiving and retaining hanger-hook portions of a plurality of coat hangers with such hangers oriented to extend substantially perpendicular to said common plane;

(d) wall-mounted hook receiving means connected to the C-shaped member for receiving a wall-mounted hook to hang the carrier on such hook, the wall-mounted hook receiving means being configured to orient the common plane of the C-shaped member in a direction extending substantially perpendicular to the plane of the wall on which the wall-mounted hook is mounted so that such hangers as are received by the carrier are oriented by the carrier to extend in a direction substantially parallel to the plane of such wall; and,

(e) the lower leg portion having a pair of formations extending in directions substantially perpendicular to said common plane on opposite sides of said common plane at a location adjacent said opening for stabilizing hanger hook portions which may be inserted through said opening.

4,335,840

MOTOR VEHICLE FISHING ROD AND LUGGAGE CARRIER

Ben H. Williams, 4615 Ranch View Rd., Fort Worth, Tex. 76109

Filed Jun. 24, 1980, Ser. No. 162,578

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—315 **16 Claims**

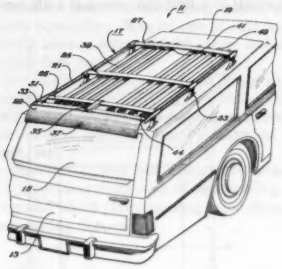
1. A fishing rod carrier comprising:

a carriage adapted to be mounted to a roof of a vehicle;

a blade secured by a hinge to the rear of the carriage and movable between a lower position and an upper position;

in the lower position, the blade defining a passage below it for deflecting the wind down over a rear window of the vehicle;

locking means for selectively locking the blade in the lower position; and



a plurality of tubes carried by the carriage transverse to the blade, each tube having an open end positioned in front of the blade so that access for inserting or withdrawing a fishing rod from one of the tubes is provided when the blade is in the upper position, but blocked when the blade is in the lower position.

4,335,841

WIRE STITCHERS

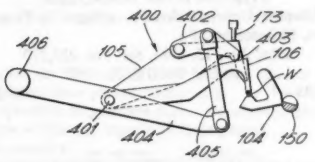
Attila A. Fogarasy, Jesmond, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,421

Claims priority, application United Kingdom, Dec. 29, 1978, 50324/78

Int. Cl.³ B27F *7/21*

U.S. Cl. 227—90 **8 Claims**



1. A wire stitcher apparatus having a driver and an anvil for forming a staple from cut wire lengths about the anvil, the improvement including a former on the driver and a lever, means for imparting continuous motion to the lever, said continuous motion being arranged to impart movement to the driver and said former and to position said driver against a cut wire length for holding the same against said anvil, said motion imparting continued movement to said former for forming a staple around said anvil, and means for arresting motion of the driver during said forming.

4,335,842

THREE COMPARTMENT DIVIDER

Judson T. Bradford; Charles L. Bradford, Jr., and Charles J. Shepherd, all of Holland, Mich., assignors to W. J. Bradford Paper Company, Holland, Mich.

Filed Dec. 12, 1980, Ser. No. 215,620

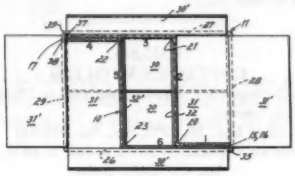
Int. Cl.³ B65D *5/48*

U.S. Cl. 229—15 **5 Claims**

1. In combination with a rectangular shipping case having parallel end walls and parallel side walls, an inserted one-piece compartment defining member formed from an elongated blank of constant width and comprising six series connected panels, each panel having a transverse width substantially equal to the height of the compartments to be formed by said compartment defining member,

said adjacent panels of said elongated blank being hingedly connected by only five parallel transverse fold lines, one of said fold lines being formed by a cut-score line located medially of the length of said elongated blank, the remaining four of said fold lines comprising two pairs of score lines, each pair of score lines being located on opposite sides of said cut-score line, and each score line of each pair being located on opposite sides of said elongated blank,

said elongated blank being folded and having its opposite end panels juxtapositioned in overlapping relationship, and its two central panels juxtapositioned in overlapping relationship,



said folded blank being capable of being collapsed to substantially flat condition or of being expanded, said folded blank when in expanded condition having those panels which are adjacent the end panels spaced apart and extending parallel to one another, and when in said case, parallel to the end walls of said case, said overlapped panels of said expanded blank being located in flush engagment with said side walls of said case and having the ends thereof in contact with diagonally opposed corners of said case, and

said expanded folded blank having such inherent resiliency at th. fold lines due to the tendency of the panels to return toward the collapsed flat condition of the blank as to bias said expanded blank against the case walls to effectively resist displacement of said blank within the case as well as withdrawal of the blank from the case.

4,335,843

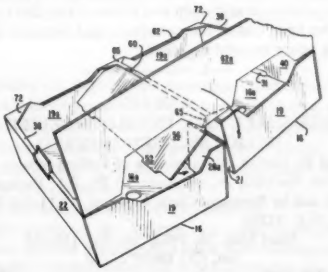
PARTITIONED STACKING CRATE AND BLANK THEREFOR

Ronald I. Kent, La Habra, Calif., assignor to Stone Container Corporation, Chicago, Ill.

Filed Feb. 9, 1981, Ser. No. 232,666

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—27 **14 Claims**



1. A foldable blank of paperboard material having a plurality

of hingedly connected panels for erecting a composite crate having at least two compartments, comprising:

A. A pair of bottom panels spaced from one another, for forming separate bottom walls of said compartments;

B. a first and a second end panel extending from opposed sides of each of said bottom panels for forming end walls of each of said compartments;

C. a first and a second side panel extending from opposed sides of each of said bottom panels, for forming side walls of each of said compartments; and

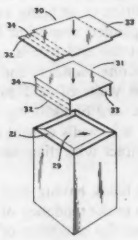
D. a central divider panel and a pair of lateral panels extending from opposite sides of the central divider panel, positioned between said bottom panels for forming a divider structure separating said compartments in the erected crate such that each of said lateral panels can be folded into substantially back-to-back, enclosing relationship with a respective one of said end panels erected from each of said bottom panels.

4,335,844

CONTAINER WITH LID

Alwin Egli, Beringen SH, Sweden, assignor to Platmanufaktur AB, Malmo, Sweden

Filed Dec. 18, 1978, Ser. No. 970,339
Claims priority, application Sweden, Jan. 2, 1978, 7800006
Int. Cl.³ B65D *5/66*
U.S. Cl. 229—43 **15 Claims**



1. The combination comprising a container having an open end and a peripheral flange extending inwardly within said container in a plane beneath said open end, and an openable and closable lid at said open end of the container, said lid comprising a first lid element removably fitted within said open end of the container above said peripheral flange, said first lid element including a bottom and at least two opposite side portions on said bottom, each said side portion including a first side wall secured to said bottom and extending upwardly therefrom substantially at right angles thereto, and a second side wall at right angles to the first side wall and overlying said bottom, the second side walls of the two opposite side portions extending towards one another, and a second lid element fitted on the container at said open end to cover the first lid element within the open end of the container, said first and second lid elements being secured together.

4,335,845

CARRIER SHEET WITH ENVELOPE LETTER SHEET DEVICE SECURED THERETO

Raymond W. Dierks, deceased, late of Pelham Manor, N.Y.; by Nicholas Noviello, Jr., executor, 10 Ely Rd., Peekskill, N.Y. 10566, and by Seymour Glass, executor, 57-11-260 St., Little Neck, N.Y. 11362

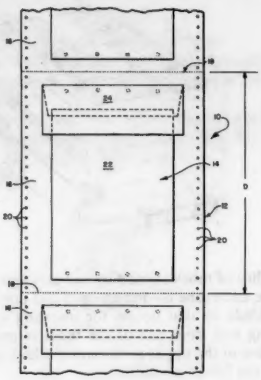
Filed Mar. 24, 1980, Ser. No. 133,332
Int. Cl.³ B65D *27/10*
U.S. Cl. 229—69 **10 Claims**

1. A carrier system comprising:

a continuous line hole punched fanfolded carrier sheet strip including sequentially aligned carrier sheet panels, each having a predetermined length;

an envelope-letter sheet device releasably secured to one of said carrier sheet panels and comprising a letter sheet portion and an envelope portion;

said envelope portion comprising a fixed rear panel having a length equal to a first distance and a closure flap portion;



said letter sheet portion extending from the free edge of said rear panel a second length equal to a second distance;

said envelope having a width greater than the width of said letter sheet and having a height equal to a third distance;

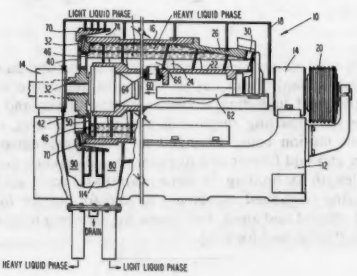
the sum of said second and said third distances, less said first distance, being equal to an amount less than the predetermined length of said continuous line hole punched fanfolded carrier sheet.

4,335,846

THREE-PHASE DECANTER

Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 15, 1981, Ser. No. 225,273
Int. Cl.³ B04B *1/20, 7/00*
U.S. Cl. 233—7 **21 Claims**



1. In a 3-phase decanter for separating solids, a light liquid phase, and a heavy liquid phase, from feed comprising a liquids-solids mixture fed into a bowl of said decanter mounted for rotation and including screw means cooperating with means for rotating said bowl for conveying said solids from said mixture out a rear portion of said bowl, the improvement comprising

a hub at a front portion of said decanter mounted for rotation with said bowl, said hub having a plurality of spaced openings therethrough,

detachable holding means mounted to each of said openings and comprising at least one light liquid phase dam holder and at least one heavy liquid phase dam holder, each of said holding means adapted to pass one of said liquid phases therethrough,

dam means having a cut-out passageway, one of said dam means carried by each of said holding means, said cut-out passageways controlling flow of one of said liquid phases therethrough in accordance with type holding means carrying said dam means,

underdams mounted between said liquid phase and said dam holders positioned for passage of said heavy liquid phase therethrough, said underdams passing said heavy liquid phase therearound and blocking passage of said light liquid phase, and

bore means disposed in said hub outwardly from said hub openings cooperating with each of said holding means for discharging said liquid phase passing through said holding means cooperating therewith.

4,335,847

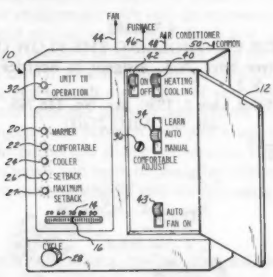
ELECTRONIC THERMOSTAT WITH REPETITIVE OPERATION CYCLE

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104

Filed May 27, 1980, Ser. No. 153,343

Int. Cl.³ F23N *5/20*; G06F *15/20*

U.S. Cl. 236—46 R **20 Claims**



1. A system for controlling the operative state of a device over a repetitive time period comprising:

a clock operative to generate digital signals representative of the time within the repetitive time period;

a digital memory;

input means for loading digital signals of desired states of the device into the memory;

means for recording the time of entry of each state signal within the repetitive time period; and

means, controlled by the clock for generating state control signals for the device over the repetitive time period, the state control signals being generated at times which are a function of their time of entry into the memory.

4,335,848

SYSTEM OF CENTRAL HEATING

Edvardas Eidejus, 2558 West 69th St., Chicago, Ill. 60629

Continuation of Ser. No. 164,689, Jun. 30, 1980, abandoned. This application May 4, 1981, Ser. No. 260,313

Claims priority, application Australia, Sep. 12, 1979, PE00435

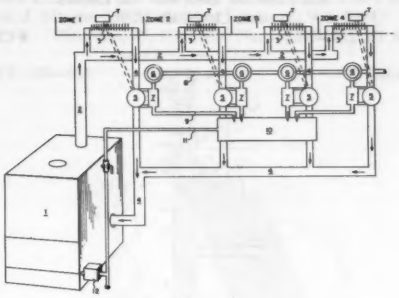
Int. Cl.³ F24D *3/02*

U.S. Cl. 237—8 R **3 Claims**

1. In a central hot water heating system including a gas fired boiler, a plurality of zones each having hot water radiator means, a return water pipe associated with each of said zones for returning water back to the boiler, and thermostat control means in each of said zones, the improvement comprising:

gas valve and metering means associated with each of said zones and communicating with the burner for said broiler;

a circulator pump connected to each of said water return pipes and operable responsive to said thermostat control means; and



gas valve actuator means connected between each of said gas valves and circulator pumps and being responsive to the operation of said pump to open its associated gas valve.

4,335,849

MOTOR VEHICLE HAVING A PASSENGER COMPARTMENT HEATING DEVICE

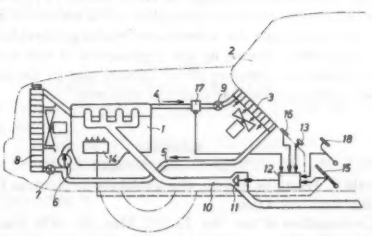
Richard van Bashuysen, Biberach, Fed. Rep. of Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 26, 1980, Ser. No. 181,618

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937165

Int. Cl.³ B60H *1/00*

U.S. Cl. 237—12.3 B **11 Claims**



1. Apparatus for heating the passenger compartment of a motor vehicle having a water cooled engine, including a cooling water circuit, and an exhaust, the device comprising:

a heat exchanger disposed in the cooling water circuit;

means for circulating air through the heat exchanger into the passenger compartment;

throttle means disposed in the engine exhaust;

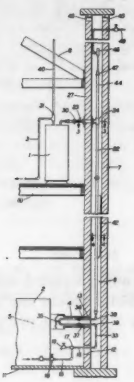
means for actuating the throttle in a sense to restrict the exhaust, thereby loading the engine thus causing a rise in the engine's temperature and a corresponding rise in the cooling water temperatures; and

means for actuating the throttle means in an opening direction in accordance with the engine load.

4,335,850
HOT WATER HEATING SYSTEM

Ralph L. Kreps, 12134 McKaig Rd., Hanoverton, Ohio 44423

Filed Jun. 16, 1980, Ser. No. 159,678
Int. Cl.³ F24B 7/00
U.S. Cl. 237—54 8 Claims



1. In combination with a home heating system and a single hot water tank which includes a furnace having a fuel combination chamber, a chimney, a flue pipe extending between the combustion chamber and chimney to carry off hot gases of combustion from the combustion chamber and into the chimney for discharge to the surrounding atmosphere, and in which the hot water tank is located in the home at least a floor above the location of the furnace and includes a cold water inlet supply line and a hot water outlet line; a first linear section of pipe connected to the water tank inlet line and extending downwardly within the chimney to a position adjacent the flue pipe; a second section of pipe connected to a supply of cold water and extending to a position adjacent the flue pipe; and a third section of pipe located within the flue pipe and extending into the fuel combustion chamber of the furnace and connected to the first and second sections of pipe whereby cold water from the cold water supply flows through the second section of pipe and into and through the third section of pipe and then upwardly in the chimney through the first section of pipe and into the water tank for subsequent discharge therefrom with the water being heated by the combustion of fuel within the fuel combustion chamber of the furnace and by the hot gases flowing through the flue pipe and chimney.

4,335,851
ELECTROSTATIC SPRAY GUN

Donald R. Hastings, Elyria, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Continuation of Ser. No. 21,197, Mar. 16, 1979, Pat. No. 4,241,880. This application Dec. 24, 1980, Ser. No. 219,661
The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.
Int. Cl.³ B05B 5/02
U.S. Cl. 239—3 9 Claims

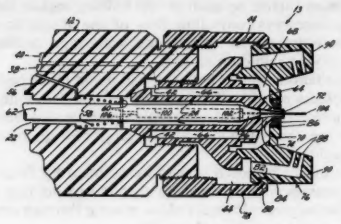
1. A method of electrostatic spray coating comprising the steps of:

dispensing a dispersed coating material toward an object to be coated from the discharge orifice of a nozzle substantially constructed of an electrically nonconductive material,

controlling the flow of said coating material through said discharge orifice of said nozzle by opening and closing a material flow control valve located in said nozzle,

imparting an electrical charge to said coating material as it is dispensed from said nozzle by means of an electrode extending from said nozzle,

supplying electrical energy from an electrical power source to said electrode sufficient to impart said charge to said coating material, and

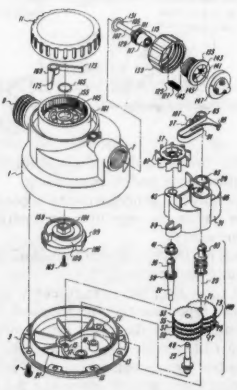


passing said electrical energy supplied to said electrode through at least a first resistor located in said material flow control valve in said nozzle to dissipate electrical energy stored between said resistor and said power source.

4,335,852
DEVICE FOR CONTROLLING THE FLOW OF FLUID

Ho Chow, River Edge, N.J., assignor to Beatrice Foods Co., Moonachie, N.J.

Filed May 1, 1980, Ser. No. 145,798
Int. Cl.³ A01G 27/00
U.S. Cl. 239—68 17 Claims



1. A device for controlling the flow of fluid, comprising:

(A) a housing, the walls of which define a chamber, said housing having a fluid flow inlet and a fluid flow outlet;

(B) means rotatably mounted to and at least partially within said chamber for measuring the volume of said flow through said chamber;

(C) a pawl movably mounted within said chamber actuated by said measuring means;

(D) a cam and ratchet wheel secured to said housing and rotatably disposed within said chamber adjacent said pawl for being driven by said pawl;

(E) a valve for controlling said flow through said chamber from said inlet to said outlet in response to the rotational disposition of said cam and ratchet wheel; and

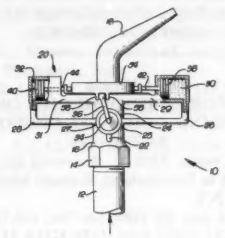
(F) a means for manually rotating said cam and ratchet wheel.

4,335,853

MOTION TRANSMISSION DEVICE

Robert S. Szemeredi, Sunland, and Edward M. Troup, Mt. Baldy, both of Calif., assignors to Lyntone Engineering, Inc., Glendora, Calif.

Filed Apr. 28, 1980, Ser. No. 144,433
Int. Cl.[3] B05B *3/04;* F16H *27/02*
U.S. Cl. 239—239 27 Claims



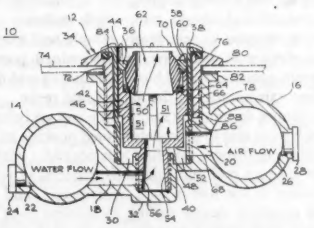
1. A linear to rotary motion transmission device, comprising:
a rotatable pinion having engageable driven means formed integrally thereon; and
a reciprocating member having drive means formed integrally thereon for engagement with said driven means on opposite sides of said pinion, one of said drive and driven means comprising a plurality of ratchet teeth, and the other of said drive and driven means comprising a plurality of flexible pawls engageable with a plurality of said ratchet teeth at each of said opposite sides of said pinion for alternating driving engagement between said pawls and teeth on one side of said pinion and sliding non-driving engagement between said pawls and teeth on the other side of said pinion throughout reciprocation of said reciprocating member.

4,335,854

ADJUSTABLE SPA JET WATER AERATOR

Arturo S. Reynoso, 27933 Oakmoor, Canyon Country, Calif. 91351

Filed Jun. 6, 1980, Ser. No. 157,007
Int. Cl.[3] A61H *33/02;* B05B *7/00, 15/08*
U.S. Cl. 239—428.5 13 Claims



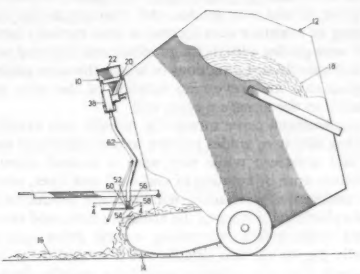
1. An adjustable spa jet aerator, comprising a housing having a passageway therein, said housing having a first inlet opening adapted to communicate with a source of pressurized water, said housing having a second inlet opening adapted to communicate with a source of pressurized air, effluent control means for varying the ratio of air to water mjxture emitted from said aerator, said effluent control means including air flow adjusting means secured in said passageway, and water flow adjusting means secured in said passageway, said effluent control means enabling independent control of air flow and/or water flow from said aerator, wherein said air flow adjustable means and water flow adjustable means are concentrically disposed in said passageway.

4,335,855

DRY PARTICLE DISTRIBUTOR FOR THE TREATMENT OF FORAGE

Maynard L. Staskal, Rte. 4, Box 40, Boscobel, Wis. 53805, and Alvin J. Eissens, 539 S. Madison, Lancaster, Wis. 53813

Filed Jun. 27, 1980, Ser. No. 163,720
Int. Cl.[3] A01C *15/04*
U.S. Cl. 239—654 7 Claims



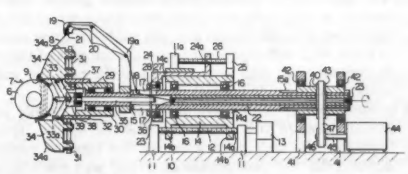
1. A distributor (10) of dry, particulate material released in metered amounts by a hopper (22) for the treatment of forage in a mechanical baler (12), comprising
(a) a manifold (30) having an air inlet (34) and at least one air outlet (32),
(b) an air blower (38) adapted to discharge into the air inlet (34) of the manifold (30),
(c) a blender (40) having an air tube (48) with a selected inside diameter with inner surfaces defining a constricted area (42) therein communicating with the air outlet (32) and adapted to receive air therefrom and a particulate material discharge tube (50) adapted to receive particulate material from the hopper (22), the particulate material discharge tube (50) having a selected outside diameter less than the inside diameter of the air tube (48) and extending within the air tube (48) for a selected distance to discharge substantially at the constricted area (42), and
(d) a distributor nozzle (52) communicating with the blender (40) and adapted to receive air and suspended particulate material therefrom and disperse the suspended particulate material over the forage.

4,335,856

COIL WINDING MACHINE

Yasuhiro Fuzita, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,961
Claims priority, application Japan, Apr. 20, 1979, 54/47965
Int. Cl.[3] H02K *15/04*
U.S. Cl. 242—7.05 B 4 Claims



3. A coil winding device for winding a coil around a smooth core armature comprising:
(A) a spindle having a shaft and a flyer secured thereto for winding a wire about an iron armature core on a cylindrical peripheral surface of the iron armature core;

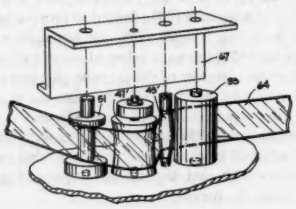
(B) mounting means for mounting said spindle in a rotatably and axially displaceable manner;
(C) spindle drive means for rotating the shaft and flyer;
(D) wire guide means for guiding the wire to be wound about said armature core by said flyer toward the armature core, said wire guide means comprising a housing rotatably journaled to an end of said spindle, a pair of wire guides, means mounting said wire guides to said housing for displacement radially of said spindle toward and away from each other, adjusting means for radially adjusting the position of said wire guides, and retaining means for engaging an armature core located at least partially between said wire guides with its longitudinal axis disposed normal to said spindle and directions in which the wire guides are displaceable for preventing rotation of the wire guides relative to the armature core; and
(E) synchronized drive means for radially and axially displacing said wire guides relative to the cylindrical surface of said armature while said wire is wound about said armature core by rotation of said shaft and flyer, whereby circumferentially adjacent windings are produceable on said cylindrical surface of the armature core, said synchronized drive means comprising a first drive means for axially displacing said spindle and a second drive means connected to said adjusting means for radially displacing the wire guides.

4,335,857

WEB ALIGNING SYSTEM

R. Fred Pfost, Los Altos; William E. Seaman, Woodside, and Chester W. Newell, San Jose, all of Calif., assignors to Newell Research Corporation, Saratoga, Calif.

Filed Jun. 24, 1980, Ser. No. 162,505
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—192 **13 Claims**



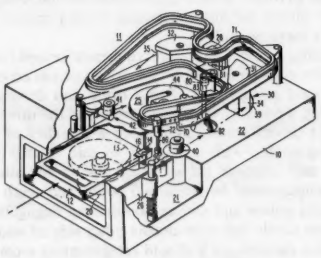
1. A web guide system comprising,
a horizontal reference surface over which a web path is defined between a transducer and a web source having a fixed width web with opposite edges,
a first web guide member between the transducer and the source, the guide partially defining said web path by said web being partially wrapped about said guide, the guide having an upright axis relative to the reference surface and having a web contact surface exceeding the width of the web and having a symmetrical arcuate profile, shallow enough so that web contact is maintained across the surface when the web travels past the guide but great enough to exert axial self-alignment forces on the part of the web in contact with said web contact surface of the guide, without edge guide contact with the web,
a crown member with a symmetrical arcuate profile positioned between the transducer and the source, spaced from the first web guide member, the member partially defining the web path proximate to said web guide by said web being partially wrapped about said member, said member having a width at least equal to the web and having an upright axis generally parallel to the web guide, said member adapted for axial motion, one of the profiles of the web guide and crown member being concave, the other convex whereby said proximate first web guide urges a moving web toward said crown member in such a manner as to tend to position said member toward the center of its range of axial movement, thus stabilizing the axial motion of the member, without edge guide contact with the web, and whereby said crown member seeks an axial position such that the path lengths of the web edges from transducer to the source are substantially equal, and
a flanged edge guide partially defining the web path between said transducer and said crown member or said web guide whereby said flanged edge guide registers said web transversely with respect to said transducer.

4,335,858

APPARATUS FOR THREADING TAPE OVER A TAPE PATH INCLUDING A CHANNEL CONFORMING TO SAID PATH

Darlene K. N. Cranna, 9800 E. Rosewood St., Tucson, Ariz. 85710, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,732
Int. Cl.³ G03B *1/04, 1/56;* G11B *15/32*
U.S. Cl. 242—195 **5 Claims**



1. In an automatic threading apparatus for moving a leader block attached to the leading end of web material wrapped on a supply reel positioned on a web transport over a complex web path from a first predefined position to a second position which couples said leader block to a take-up reel having a hub disposed on said transport for subsequent conjoint rotational movement with said take-up reel about the axis of rotation of said take-up reel during winding and unwinding of web material on and off said take-up reel, which includes:
a device adapted to selectively couple said leader block to said device at said first predetermined position which permits rotation of said block relative to said device about a first axis parallel to the axis of said reels;
a mechanism for moving said device and said coupled leader block from said first predetermined position to said second position to dispose said first axis coaxially with the axis of said take-up reel and said web material in winding relationship to the hub of said take-up reel, and for guiding said coupling device during movement over a predetermined path which corresponds to said tape path, said mechanism comprising in combination:
a continuous guide band;
a continuous channel member defining a closed path, a major portion of which corresponds to said complex tape path, said channel including upper and lower guide slots for holding upper and lower edges of said guide band for sliding movement relative to said channel;
means for permanently attaching said device to said guide band to permit rotation of a coupled leader block relative to said first axis when said leader block is positioned to rotate with said take-up reel during winding or unwinding of the tape; and
means for driving said band lengthwise through said channel in either direction to move said coupling device from a

first position adjacent said supply reel to a second position where the coupled leader block is positioned to rotate with said take-up reel and position said attached tape in a pre-wrap relationship with the hub of said take-up reel.

4,335,859

DEVICE TO REMOVE BOBBINS FOR AN OPEN-END SPINNING MACHINE

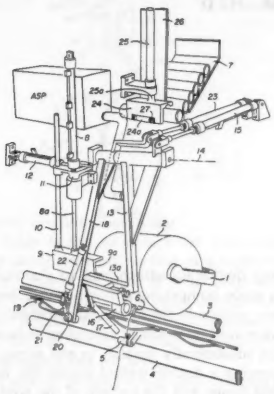
Guy Courvoisier, Geneva, Switzerland, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Apr. 3, 1980, Ser. No. 137,291

Claims priority, application Switzerland, Apr. 5, 1979, 3178/79

Int. Cl.³ B65H *54/26, 67/04*

U.S. Cl. 242—35.5 A 10 Claims



1. A device to remove bobbins for an open-end spinning machine, wherein each bobbin is installed so as to rotate between two elastic holding elements of a supporting stirrup joined in an articulated manner to the frame of the machine, and rests against a drive shaft of said machine, comprising:

a gripping element for activating said stirrup, first and second rods pivotally fixed to said gripping element permitting that element a direction of movement in a plane perpendicular to the axis of articulation of said stirrup and adjacent to the inner face of one of the elements thereof,

a swivelling element mounted on said rods to give said gripping element pivotable on said rods a direction of movement in a plane at right angles to the previous plane,

hydraulic means to move said gripping element according to each of said directions of movement and between at least two respective limit positions,

an arm to discharge the bobbin pivotable around an axis, an attachment to said arm that defines a trajectory of said arm which is passable between the elements of the stirrup when the stirrup is free of a dischargeable bobbin,

a first jack to move said arm along its trajectory between at least two limit positions of rest and discharge,

a yarn-suction pipe pivotally fixed to said attachment to draw yarn into said pipe during bobbin discharge and rewinding,

a winding tube transfer mechanism, a second jack associated with said mechanism to transfer a tube from a supply storage point to a position between the holding elements of the stirrup, and

shears within said attachment to free the yarn in said suction pipe when the arm is in its discharge position.

4,335,860

ELECTRIC HOUSEHOLD BLENDER WITH MOTOR ENABLED BY LID LOCKING

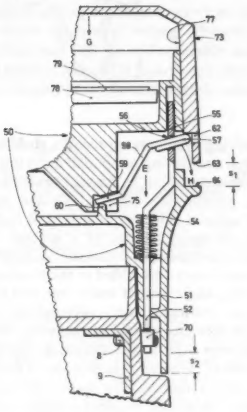
Johannes Grandel, Frankfurt am Main, and Günther Falkenbach, Eschborn, both of Fed. Rep. of Germany, assignors to Braun AG, Frankfurt, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,332

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904498

Int. Cl.³ B02C *18/12, 23/04*

U.S. Cl. 241—37.5 5 Claims



1. An electric household blender comprising:

(a) a motor bse (4) mounting a motor and an electrical operating switch (27) therefor;

(b) a blender attachment (50) having a housing, rotating cutting tools and a removable lid (73), said attachment being mountable on the motor base such that said cutting tools may be driven by said motor;

(c) a lock ring (9) provided with a plurality of outwardly extending lock pins (8), said lock ring being rotationally movable within said motor base about a longitudinal axis thereof and including means (25) for enabling the motor operating switch to be turned on and off;

(d) a plurality of springs;

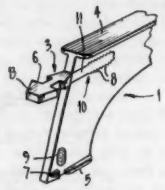
(e) a plurality of lock pin supports (51) in the form of bars, the two ends of which are vertically disposed, said bars each having a center portion bent with respect to said ends, said lock pin supports being guided on said attachment housing and being vertically movable against the force of said springs; and

(f) a plurality of lock levers (58) individually cooperating with said lock pin supports in a camming manner, said lock levers being mounted for pivotal movement about horizontal axes and having free ends (57) movable into openings (62) in said lid upon its depression, the depression of said lid camming said lock pin supports downwardly to enable the rotation of said lock ring and lock pins, whereby said operating switch may not be turned on to energize the motor and drive the cutting tools unless the blender attachment is properly mounted on the motor base and the lock ring is rotated.

4,335,861
SHELVING SYSTEM

Dinko Klaric, 165 City Rd., South Melbourne, Victoria, 3205, Australia

Filed Apr. 29, 1980, Ser. No. 145,497
Claims priority, application Australia, May 2, 1979, PD8622; May 22, 1979, PD8914
Int. Cl.³ A47G 29/02; E04G 3/08; E06G 7/28
U.S. Cl. 248—246 10 Claims

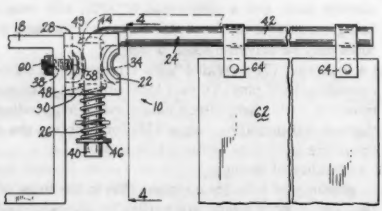


1. A shelving system comprising a shelf bracket formed of a first material and having a top load carrying edge, fixing means on said bracket adapted to fix said bracket to a longitudinally extending substantially vertical slotted member having an elongated vertical slot, characterized in that said fixing means comprises an insert formed of a second material of higher tensile strength than said first material, said fixing means having a portion firmly embedded in the bracket at or near the top load carrying edge thereof and a free end extending from said bracket, and abutment means adjacent the bottom edge of the bracket, the free end of said insert being shaped to engage the slotted member whilst said abutment means abuts against the slotted member, whereby the bracket is firmly held in position on said slotted member by cantilever action between the bracket and the slotted member when a load is placed on the bracket.

4,335,862
MOD FLAP MOUNTING DEVICE

Robert F. Sherman, 397 First St., Brooklyn, N.Y. 11215

Filed Dec. 31, 1979, Ser. No. 108,411
Int. Cl.³ E04G 3/00
U.S. Cl. 248—289.1 17 Claims



1. A mud flap mounting device for mounting a mud flap to the frame rail of a trailer truck comprising:

a frame member having an upper surface and forward and rearward end portions, said forward end portion having means to facilitate mounting to a frame rail so that said rearward end portion extends beyond the frame rail,

said upper surface having a recess located at said rearward end portion of said frame member so that said recess is positioned beyond the frame rail when said frame member is mounted to said frame rail, said recess having first and second end portions in approximately linear alignment,

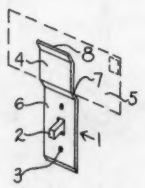
a generally L-shaped support rod for attachment to a mud flap having a first leg, a second leg, and an arcuate portion therebetween, said support rod being rotatably mounted to said frame member to rotate approximately 180 degrees between first and second positions with said second leg received in said first end portion of said recess in said first position and received in said second end portion of said recess in said second position, said recess substantially encompassing said arcuate portion and being of a depth to encompass at least one-half of the transverse dimension of said second leg, and

biasing means yieldably maintaining said support rod in said recess, said biasing means retaining said rod in said recess during trailer truck operation but allowing upward manual movement of said rod outwardly of said recess for manual rotation of said rod between said first and second positions.

4,335,863
HOLDING DEVICE FOR ATTACHMENT TO ELECTRICAL INSTALLATIONS

John W. Rapps, 1683 Westervelt Ave., Baldwin, N.Y. 11510

Filed Mar. 28, 1980, Ser. No. 134,882
Int. Cl.³ A47F 5/00; H05K 5/03
U.S. Cl. 248—316 D 14 Claims

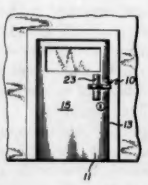


1. Holding device for attachment to electrical installations installed in walls, comprising a base portion, means for attaching said base portion to the electrical installation, and a planar flange portion integral with and extending outwardly from said base portion substantially parallel to and along the surface of the wall forming a double-walled pocket for holding articles between said flange and the surface of the wall in which said electrical installation is installed.

4,335,864
NEWSPAPER HOLDER

Marjorie A. Merlini, 36-1 Briarwood La., Marlboro, Mass. 01752

Filed Apr. 11, 1980, Ser. No. 139,461
Int. Cl.³ A47F 5/00
U.S. Cl. 248—316 D 5 Claims



1. Newspaper holder for use on a door, comprising:

(a) a generally U-shaped clip consisting of a first leg, adapted to lie against the inner surface of the door, a base adapted to lie against the edge surface of the door, and a second leg adapted to lie against the outer surface of the door, the legs of the clip converging toward one another away from the base to provide a substantial clamping force when applied to the edge of the door, and

(b) a bow extending from the clip across the surface of the door and having an outer end that engages the surface of the door with substantial pressure, the clip and the bow

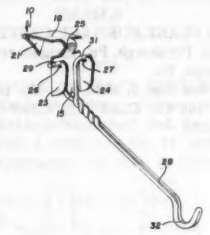
being integrally formed from a single strip of material, the free end of the first leg being provided with a portion bent outwardly to prevent damage to the surface of the door and the free end of the bow being provided with a similar portion curved away from the surface of the door, being formed in the base of the clip to enable the holder to be fixed to the end of the door and facilitate storage of the holder when it is not in use.

4,335,865

CURTAIN ROD BRACKET

Joseph A. Cormier, 136 Main St., Spencer, Mass. 01562

Filed Oct. 9, 1979, Ser. No. 83,114
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—558 **2 Claims**



1. Curtain rod bracket, comprising:

(a) a main body in the form of a flat plate adapted to lie vertically along the front surface of a window casing,

(b) an upper body in the form of a flat plate adapted to lie alor g the upper horizontal surface of the casing,

(c) a pointed holding member extending downwardly from the inner end of the upper body and adapted to lie between the casing and the wall,

(d) a pair of spaced, parallel wings each extending forwardly from the main body to engage and hold a curtain rod, and

(e) a deformable arcuate connector which is substantially narrower than the upper body and the main body, said connector being integral with the main body and the upper body and joining the central portion of the forward edge of the upper body to the central portion of the upper edge of the main body, thus permitting the distance from the main body to the holding member to be adjusted to the exact thickness of the casing, each wing being provided with a notch at its upper portion, and a hanger being provided that has a Y-form shape which includes two arms and a single leg joined to the two arms, each of the two arms engaging and being supported by a notch, and the leg having a hook to support a decorative object.

4,335,866

FLOW CONTROL DEVICE

Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 77,456, Sep. 20, 1979, Pat. No. 4,285,492. This application Jun. 25, 1981, Ser. No. 277,309
Int. Cl.³ F16K *7/06;* A61M *5/14*
U.S. Cl. 251—9 **11 Claims**

1. A tubing clamp for regulating flow of fluid through a length of flexible tubing comprising:

a clamp body defining a surface for supporting a length of flexible tubing having a longitudinal axis;

opposing walls extending from said support surface and presenting a passage for said tubing;

a platen mounted between said walls for contacting said tubing;

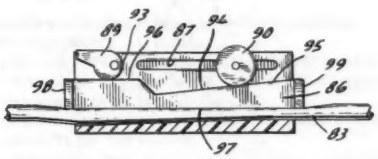
guide surfaces arranged in said walls;

a first rotatable member positioned to be guided by said guide surfaces;

said platen constructed and arranged to be movably positioned between said first rotatable member and said tubing;

said platen presenting a compression surface against said tubing substantially along and over the path of travel of said first rotatable member, and cooperating with said first rotatable member to exert an incremental compressive force on said tubing and by means of said platen to distribute the compressive force of said first rotatable member over a wide area of said tubing including a substantial distance along its longitudinal axis; and

a second rotatable member operatively positioned within said clamp body and arranged to cooperate with said first rotatable member and said platen to exert an incremental compressive force upon said tubing whereby said first rotatable member and said second rotatable member provide separate control means for coarse and fine regulation of said flow of liquid through said flexible tubing;



said second rotatable member comprises a cam having oppositely disposed pins extending therefrom, said pins extending into said opposing walls so as to support said cam; said cam in a first operating position being effective to compress said platen against said tubing; said cam being rotatable to a second operating position in which said compression of said tubing by said platen is released;

said first rotatable member comprising a roller having pins extending therefrom with said pins positioned in said guide surfaces; said cam having a smaller radius than said first rotatable member whereby movement of said first rotatable member along said guide surfaces and movement of said cam in said supporting walls is effective to contact said first rotatable member initially against said platen so as to pivot said platen against said tubing thereby compressing said tubing and consequently constricting said flow of said liquid through said tubing; movement of said cam against said platen being effective to further compress said platen against said tubing thereby further compressing said tubing so as to incrementally increase or decrease said flow of said liquid in minute quantities.

4,335,867

PNEUMATIC-HYDRAULIC ACTUATOR SYSTEM

John A. Bihlmaier, 840 N. Maplewood St., Orange, Calif. 92667

Filed Oct. 6, 1977, Ser. No. 839,924
Int. Cl.³ F15B *13/042, 13/16;* F16K *31/12*
U.S. Cl. 251—28 **17 Claims**

1. An actuator system capable of controlling a linear output in response to a control signal input, comprising:

an output member;

hydraulically actuated piston means for producing forced linear movement and positioning of said output member;

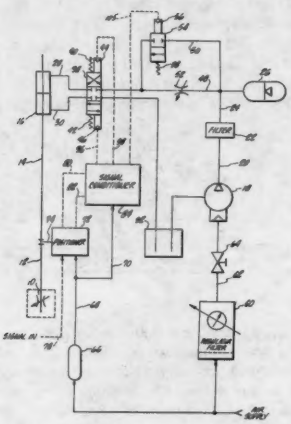
hydraulic source means capable of providing pressurized hydraulic fluid and receiving exhausted hydraulic fluid;

valve means for selectively providing communication between said hydraulic source means and said hydraulically actuated piston means for actuation thereof, said valve means being in hydraulic communication with said hydraulically actuated piston means and with said hydraulic source means;

a pneumatic supply system having pneumatic source means for providing pressurized air;

pneumatic valve control means for controlling the position of said valve means; and

a pneumatic positioner system including a pneumatic positioner, a feedback link extending from said positioner into association with said output member to sense the location of said output shaft, control signal input means for said positioner to receive the control signal input, a plurality of positioner system output signal lines, said positioner being in pneumatic communication with said pneumatic source means, said pneumatic positioner system being designed and constructed to selectively provide pneumatic pressure



to said positioner system output signal lines, as determined by the control signal input, in response to the position of said output member, at least two of said positioner system output signal lines being in pneumatic communication with said pneumatic valve control means, and a signal conditioner receiving the outputs of said positioner and pressurized air from said pneumatic source means and being in communication with said positioner system output signal lines, said signal conditioner having regulator means for limiting the maximum pressure thereto from the outputs of said positioner and amplifier and differential pressure sensor valves being in communication with said regulator means, to amplify and condition the output therefrom to said positioner system output signal lines.

4,335,868

DEVICE ADAPTED TO AFFORD PROTECTION AGAINST FALLING ROCKS AND AVALANCHES IN MOUNTAINOUS TERRAIN

Hans Ribbert, Unterheufeld 11, 8202 Bad Aibling, Fed. Rep. of Germany

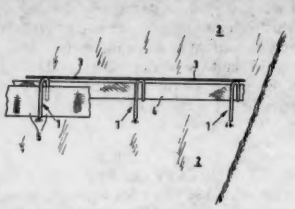
Filed Apr. 2, 1980, Ser. No. 137,116

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910239

Int. Cl.³ E01F *7/00*

U.S. Cl. 256—1 **10 Claims**

1. A device adapted to afford protection against falling rocks and avalanche in mountainous terrain, comprising a plurality of supporting members adapted to be attachable to securing means provided in the terrain, at least two of said supporting members supporting a guard net or a guard plank arrangement, the individual supporting members being interconnected, characterized in that the supporting members are U-shaped curved



bars, the end portions of whose legs can be sunk into securing means installed in the terrain and are hence secured.

4,335,869

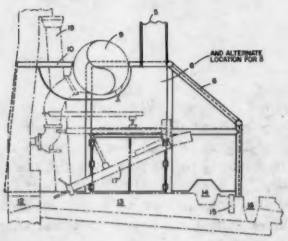
IRON BLAST FURNACE CASTING CAGE

A. Leslie Miller, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1980, Ser. No. 155,426

Int. Cl.³ C21B *7/22*; C21C *5/38*

U.S. Cl. 266—158 **6 Claims**



1. An iron blast furnace with a casting cage comprising an enclosure for substantially surrounding a blast furnace tap hole and auxiliary equipment and having means defining an upper wall portion disposed above said tap hole and auxiliary equipment and a side wall portion extending generally downwardly from said upper wall portion, an access means in said side wall, an exhaust opening formed in one of said wall portions, said upper and side wall portions adapted to be disposed in a closely surrounding relation to said tap hole, auxiliary equipment and the floor of the cast house, and exhaust means extending from said exhaust opening for withdrawing pollutants generated in said cage.

4,335,870

COOLING ELEMENT FOR USE IN METALLURGICAL FURNACES

Arnulf Diener, Dortmund; Walter Laucht, Hagen, and Eugen Icking, Witten, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Dec. 7, 1979, Ser. No. 101,226

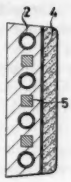
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1979, 2903104

Int. Cl.³ F27B *1/24*

U.S. Cl. 266—193 **7 Claims**

1. A cooling element for use in metallurgical furnaces, comprising a body of steel cast at a temperature above the liquidous point and having a surface adapted to face inwardly of the furnace; a pluralitiy of steel tubes embedded in said body and adapted to have cooling fluid circulated through them; and means embedded in said body spaced from said steel tubes and operative for absorbing, during the casting of said body, the temperature differential which arises between the casting tem-

perature and the liquidous point; said means comprising steel members to absorb heat for preventing melting of said steel tubes during casting of said body; said steel tubes forming



channels for conducting said cooling fluid, said steel tubes preventing development of cracks in walls of said channels from defects and cracks which may be present in said cast body.

4,335,871

PRESSURIZED FLUID DEVICE

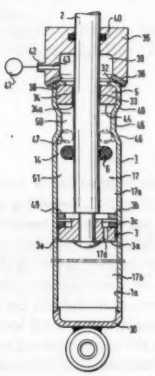
Werner Mölders, Plaidt, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,658

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905511

Int. Cl.³ F16F *9/36, 9/43*

U.S. Cl. 267—64.28 **25 Claims**



1. A pressurized fluid device comprising container means, a cavity defined within said container means, a piston rod passage through said container means, a piston rod having an outer cylindrical face introduced into said cavity through said piston rod passage and movable with respect to said container means, means defining first and second compartments within said cavity, a filling passage in said container means defined at least in part by said piston rod passage and having an inner end adjacent said second compartment for introducing a pressurized fluid into said cavity, an annular closure member carried by said piston rod within said cavity and adapted to be located in a sealing position with respect to said inner end of said filling passage during operation of the device, said annular closure member being movable within said cavity along with said piston rod from a filling position in said first compartment to an intermediate position in which said annular closure member separates said first compartment containing pressurized fluid from said second compartment which is in communication with the surrounding atmosphere by said filling passage, so that after movement of said closure member to said intermediate position by said piston rod the closure member is further moved toward said sealing position by the pressure within said first compartment while expelling the fluid within said second compartment through said filling passage.

4,335,872

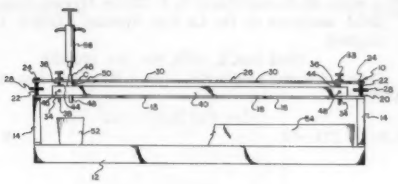
SAMPLE PREPARATION SUPPORT APPARATUS

Michael E. Caplis, 676 N. 50 West, and Larry S. Eichmeier, 210 Coolwood Dr., both of Valparaiso, Ind. 46383

Filed Mar. 10, 1980, Ser. No. 129,114

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—43 **6 Claims**



1. A sample preparation support apparatus comprising:

upright end members;

a first plate member supported on said upright end members, said first plate member having a plurality of spaced notches formed along the side thereof;

a second plate member having a plurality of spaced notches formed along the side thereof;

means supporting said second plate member vertically spaced over said first plate member, said notches in said first and second plate members being in vertical alignment; and

an elongated bar member removeably connected between said first and second plate members, said elongated bar member being contiguous to said first and second plate members.

4,335,873

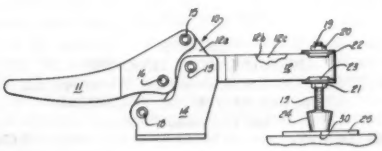
TOGGLE BOLT CLAMP

Henry Kiefer, Troy, Mich., assignor to C. J. Edwards Company, Royal Oak, Mich.

Filed May 21, 1980, Ser. No. 151,845

Int. Cl.³ B25B *1/14*

U.S. Cl. 269—228 **10 Claims**



1. In combination, an axially extending screw threaded plunger, an elastomeric work engaging bumper having a body axially spacing a work engaging surface and an abutment surface, the bumper and one end of the plunger having coaxial telescoping portions removably secured together in closely interfitting relationship one within the other, said one end of the plunger abutting said abutment surface of the bumper, the interior telescoping portion extending coaxially into a mating axially opening socket in the exterior telescoping portion and having a cross-section slightly greater than the cross-section of said socket to effect an interference fit therein stressing the elastomeric material of said bumper, and means in addition to said interference fit yieldably resisting relative axial displacement between said telescoping portions comprising a screw threaded portion of said bumper extending axially from said abutment surface for a minor part of the axial extent of said

telescoping portions, the remaining major axial extent of the telescoping portion of said bumper comprising in its unstressed condition prior to assembly with the plunger a smooth unthreaded surface for effecting an interference fit with the telescoping portion of said plunger, the elastomeric material of said unthreaded bumper surface stressed by said interference fit projecting resiliently within its elastic limit into the screw threads of said plunger.

4,335,874

SHEET COUNTING APPARATUS

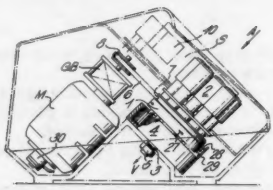
Ron Shier, Ryde, and Roger F. E. Doyle, Havant, both of England, assignors to De La Rue Systems Limited, London, England

Filed Dec. 5, 1979, Ser. No. 100,459

Claims priority, application United Kingdom, Dec. 8, 1978, 47671/78

Int. Cl.³ B65H *3/12*

U.S. Cl. 271—95 **9 Claims**



1. Apparatus for counting flexible sheets contained in a stack, the apparatus comprising means for clamping one end of a stack of sheets; a rotary sheet removing assembly including a plurality of suction organs which are arranged, on rotation, sequentially to contact the side face of the free end of the stack and to remove the sheets from their initial position in the stack; counting means to count each sheet removed; drive means to rotate said sheet removing assembly in a forward direction, said drive means comprising a driving motor adapted to drive said rotary assembly via a gear box having two selectively engageable gear trains, one providing a normal running speed for counting and the other providing a lower running speed for indexing prior to a counting operation, and indexing means to energize said drive means to rotate said rotary assembly, prior to a counting operation, to a start position in which a suction organ is effectively positioned in alignment with the side face of the stack.

4,335,875

JOGGING ROPE HARNESS

Orville E. Elkin, 2808 S. Robinson Dr., Winnsboro, La. 71295

Filed Nov. 14, 1980, Ser. No. 207,064

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—70 **3 Claims**

1. A jogging rope harness for improving a jogger's body posture and equilibrium while running, walking and the like, said harness comprising a rope member of sufficient and fixed length to extend across a back of the user and having the ends terminating proximate the hands of the user, looped hand supports formed by each of the ends for receiving the hands of the user and being formed so the respective ends are secured onto an adjacent portion of the rope member forming the looped hand supports, an elongated cylindrical collar of soft cushioning material having a portion of a surface of the elongated cylindrical collar for engaging the jogger's body and having the rope member axially extending fixedly through the entire length of the elongated cylindrical collar, said elongated cylindrical collar being positionable about the jogger's upper torso and neck to facilitate supporting of said jogger's arms.

4,335,876

JOUSTING GAME

W. Gary Westernoff, 7538 Huialoha St., Honolulu, Hi. 96825

Filed May 27, 1980, Ser. No. 153,068

Int. Cl.³ A63B *71/02*; B62J *39/00*

U.S. Cl. 273—1 R **7 Claims**

1. A jousting game comprising a jousting arm assembly which includes a jousting arm, means for elevating or depressing the jousting arm, and means for mounting the jousting arm assembly on the handle bar of a bicycle; the means for elevating or depressing the jousting arm includes a jousting arm collar with a central opening and two spaced threaded openings in its periphery, one at its top and the other at its side, and a control lever, one end of the control lever is threaded and is threadedly secured to the top peripheral opening, and one end of the jousting arm is threaded and is threadedly secured to the other peripheral opening.

4,335,877

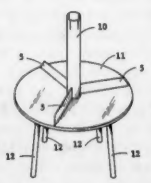
ROUND TABLE TENNIS TABLE

Donald L. Long, 5772 E. 12th St., Tucson, Ariz. 85711

Filed Jun. 27, 1980, Ser. No. 163,931

Int. Cl.³ A63B *61/00*

U.S. Cl. 273—30 **1 Claim**



1. A game table designed for playing variations of table tennis with standard table tennis balls and paddles, comprising:

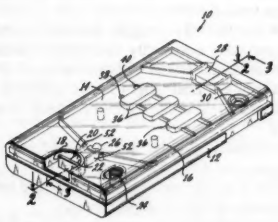
(a) a table member having a planar playing surface of circular shape on its upper surface;
(b) a plurality of panels radiating from the center of the upper surface of the table member to the edge of the upper surface of the table member, said panels radially dividing the upper surface of the table into equal sized sections, said dividing panels having an upper edge which is parallel to the lower edge, the inner shorter edge of the dividing panels extending upward at a 90° angle from the center of the playing surface and the outer short edge sloping inwardly from the edge of the playing surface, said dividing panels being fastened to one another by means of clip members which attach to the upper portions of said panels where said panels converge at the center of playing surface, two support members which attach to the lower portions of the panels being used to secure the panels in an upright position when said panels are utilized to divide the playing surface into two equal sections;
(c) a cylindrical member of hollow disposition optionally usable for screening the ball and deflecting the ball, said cylindrical member having open ends and being located at the center of the playing surface, said cylindrical member having 3 equally spaced slots on one end and 4 on the other, the height and width of the slots being approximately the same as the height and width of the panel dividers enabling said cylindrical member to be placed over the panel dividers at the center of the playing surface.

4,335,878

GAME HAVING RECIPROCALLY MOVING INTERFERENCE MEMBERS

Toru Nishimiya, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed May 12, 1980, Ser. No. 149,041
Int. Cl.³ A63D *3/02*
U.S. Cl. 273—119 R **14 Claims**



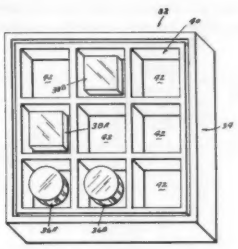
1. A game of the type having a housing, a playing surface located in the housing and an object propulsion means associated with said playing surface for propelling an object across said playing surface which comprises:
a target means located in association with said playing surface, at least a portion of said target means being movable between a first position and a second position, said movable portion of said target means moving from said first position to said second position upon being contacted by said object means;
an interference means movably mounted in said housing, at least a portion of said interference means associated with and projecting upwardly from said playing surface, said portion of said interference means movable on said playing surface in an area located between said target means and said object propulsion means;
activation means for continuously moving said portion of said interference means associated with said playing surface;
said interference means moving in response to said activation means between at least one position wherein said portion of said interference means associated with said playing surface is capable of inhibiting the movement of said object between said object propulsion means and said target means and at least one position wherein said portion of said interference means associated with said playing surface does not inhibit the movement of said object between said object propulsion means and said target means.

4,335,879

GAME APPARATUS AND MEANS FOR PLAYING THE SAME

Darrell D. Wiskur, Rte. 7, Harrison, Ark. 72601

Continuation-in-part of Ser. No. 925,191, Jul. 17, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,116
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—260 **6 Claims**



1. A game apparatus for playing color oriented games wherein colored game motivator devices are utilized to control game play, said apparatus comprising a playing board having a plurality of distinct playing areas positioned thereon, a plurality of colored playing pieces, each of said playing areas and each of said playing pieces being colored by a different one of the respective primary and secondary colors of red, yellow, blue, green, orange, and purple, and a game motivator for producing color combinations for use in controlling the positioning of the playing pieces on said playing board, said motivator including a pair of similar dice-like devices each of which is cube shaped and balanced to equalize the possibility of each of its surfaces turning up when tossed on a surface, each of said dice-like devices being defined by six colored plane surfaces arranged in opposed pairs, at least one surface of each of said dice-like devices being colored red, another yellow, and another blue, said dice-like devices when thrown on a surface being capable of producing on the upper surfaces thereof a plurality of different combinations of colors thereon to control the moves of the colored playing pieces on the playing board, the coincidences of the primary colors appearing on the upper surfaces of the game motivator devices determining the possible game move options such that when two different primary colors turn up a possible game move option can be additionally made based upon the resultant secondary color obtained by combining said different primary colors, said secondary color not being found on any surface of said game motivator devices.

4,335,880

ELECTRIC EYE ACTUATED GUN ARCADE

Burton C. Meyer, Downers Grove; Gunars Licitis, Lombard, and Derek A. Brand, Naperville, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

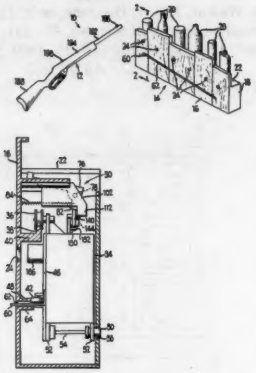
Continuation of Ser. No. 659,216, Dec. 19, 1976, Pat. No. 4,296,929. This application Sep. 8, 1980, Ser. No. 185,374
The portion of the term of this patent subsequent to Jul. 16, 1998, has been disclaimed.
Int. Cl.³ A63F *9/02*; F41J *5/02, 5/06*
U.S. Cl. 273—310 **4 Claims**

1. A target shooting apparatus, comprising:
a plurality of target devices;
a frame removably supporting said target devices;
a selectively actuable target ejector means for forcibly and

physically ejecting a target off of said frame when said ejector means is actuated;

a selectively operable means for providing light of a predetermined intensity;

circuit means including a phototransistor remotely disposed from said targets providing an output signal upon the sensing of light of a predetermined intensity;



control means operatively associated between said circuit means and said target ejector means for actuation of the ejector means in response to the output signal from said circuit means; and

carriage means mounting said circuit means and control means for movement between said targets wherein the control means is adjacent the respective target ejector means.

4,335,881

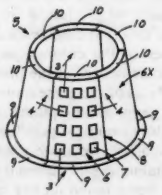
MULTI-SECTIONAL ASSEMBLED BASKET GOALS AND THEIR GAMES USAGE

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Oct. 17, 1980, Ser. No. 198,060

Int. Cl.[3] A63B *63/00*

U.S. Cl. 273—348 **6 Claims**



1. Multi-sectional assembled basket goals and their games usage wherein each of said basket goals comprises a multiplicity of thin plate-like sections of pliable sheet plastic material with a general 3-dimensional trapezoidal shape as cut from a frustum of a thin-walled cone, with the two unequal length sides of said trapezoidal shape being curved and the two equal length sides of said trapezoidal shape being straight, with said unequal length sides having stiffening rims attached thereto and said equal length sides having edge jointing means consisting of an elongated, partially cylindrical material male body with a diameter substantially greater than the thickness of each of said sections formed longitudinally along the full length of one jointing side edge of each of said sections and an elongated, partially cylindrical receptive mating female channel formed longitudinally along the full length of the opposite jointing side edge of each of said sections, said male body of one said jointing side edges of said sections being able to be inserted lengthwise into and frictional held in said receptive mating female channel of said jointing side edge of another of said sections, thus permitting the lateral jointing of a multiplicity of said sections and forming a continuous and substantially circular walled structure having the appearance of a bottomless basket, whereby said basket goals, together with appropriate game balls, playing area, and playing surface, can be used in a variety of simple indoor/outdoor team action games.

4,335,882

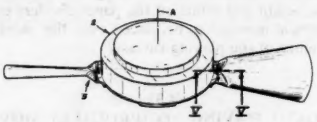
SHEET-METAL TARGET PIGEON

Ludovico L. Della Rovere, Avenida Paez, Quinta Ismenia, El Paraiso, Caracas, Venezuela

Continuation-in-part of Ser. No. 921,006, Jun. 30, 1978, Pat. No. 4,206,914, which is a continuation-in-part of Ser. No. 892,921, Apr. 3, 1978, Pat. No. 4,218,061, and a continuation-in-part of Ser. No. 882,907, Mar. 1, 1978, and a continuation-in-part of Ser. No. 762,019, Jan. 24, 1978, Pat. No. 4,133,532. This application Aug. 10, 1979, Ser. No. 65,467

Int. Cl.[3] F41J *9/16*

U.S. Cl. 273—363 **15 Claims**



1. A target pigeon comprising:

a generally flat web formed entirely of sheet metal with a central throughgoing hole at a web axis and having a pair of diametrically opposite web ends;

a pair of sheet-metal vanes on said web extending diametrically oppositely from said web ends and tipped propeller-fashion to each other;

a pair of substantially upright, generally axially projecting, and oppositely outwardly tipped sheet-metal tabs on said web ends diametrically opposite each other and having a predetermined axial height above said web; and

a cup-shaped witness cap formed entirely of sheet metal and having

a substantially circular rim centered on a cap axis and having one axially directed rim end engageable with said web at said web ends between said tabs and another opposite axially directed rim end,

a pair of diametrically opposite and radially outwardly projecting lips on said one rim end and formed with respective throughgoing apertures through which said tabs can project with said one rim lying snugly on said web ends,

a pair of diametrically opposite formations of mass greater than said lips on said rim between said lips, and

an end plate extending across and closing said rim at said opposite rim end.

14. A target pigeon comprising:

a propeller part having a web centered on and transverse to a web axis and having a pair of web ends, and a pair of diametrically opposite vanes extending outwardly from said ends and tipped propeller-fashion to each other;

a witness part centered on a witness axis and having a rim engageable with said web ends;

means including interengaging formations on said parts for holding said parts releasably together with said axes aligned and said rim snugly engaged with said web and for freeing said parts from each other when impacted;

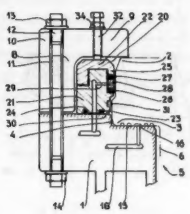
an axially open vessel releasably secured to one of said parts and open toward the other of said parts, said vessel being closed by said other part when said parts are held together by said formations; and

a mass of light material in said vessel whereby when said parts are separated said light material is freed.

4,335,883
SEALING DEVICE FOR A COMPONENT VERTICALLY DISPOSED WITHIN THE PRIMARY VESSEL OF A NUCLEAR REACTOR

Jean Le Roux, Verrieres le Buisson, and Andre Plagnard, Montrouge, both of France, assignors to Novatome, Le Plessis, France

Filed Apr. 22, 1980, Ser. No. 142,847
Claims priority, application France, Apr. 27, 1979, 79 10740
Int. Cl.³ F16J *15/06, 15/40;* **B65D** *45/16*
U.S. Cl. 277—3 **7 Claims**



1. A sealing device for a component vertically disposed within a primary vessel of a nuclear reactor and having an upper cylindrical part forming a flange whose diameter is greater than the diameter of the component, said component resting by said flange on a horizontal closing plate of the primary vessel around a hole for the component to pass through the plate and held in place by an annular anti-flyoff flange, one part of which rests on the upper surface of the flange of the component and another part of which has devices for fixing and clamping the flange of the component on the plate, said sealing device comprising:

(1) a seal-bearing ring disposed around the flange of the component and resting on the plate of the reactor below the anti-flyoff flange;

(2) a first set of annular seals disposed on said sealing ring ensuring sealing between the inner side surface of the seal-bearing ring and the outer side surface of the flange of the component at the part thereof located above the plate;

(3) a second set of annular seals ensuring sealing between the base surface of the ring and the plate;

(4) a clamping ring disposed above the seal-bearing ring includes an inner rim coming to bear at the interior of a seal-bearing seating disposed between the seal-bearing ring and the flane of the component, on at least one of the seals for applying pressure on this seal allowing its radial dilatation;

(5) a means for applying a backing force vertically downward on the clamping ring and thus on the seal-bearing ring, fixed on the anti-flyoff flange at the part thereof located above the seal-bearing ring; and

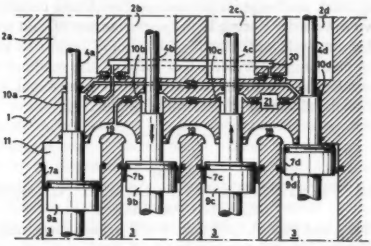
(6) a means for injecting an isolating gas between the flange of the component and the plate to ensure isolation of the interior of the vessel independently of the seals of the seal-bearing ring, said sealing device being entirely removalble for fitting and removal of the component.

4,335,884
DEVICE FOR ENSURING DYNAMIC TIGHTNESS, PARTICULARY FOR STIRLING ENGINE

Michel Darche, Les Marronniers, France, assignor to Societe ECA, Asnieres, France

Filed Jun. 16, 1980, Ser. No. 159,686
Claims priority, application France, Jun. 18, 1979, 79 15537
Int. Cl.³ F02G *1/04*
U.S. Cl. 277—3 **6 Claims**

1. In a device for ensuring dynamic tightness employing a first sealing means in each of an assemblage of closed spaces filled with gas at high pressure, each of said closed spaces having an outlet rod, with a reciprocating longitudinal sliding movement, emerging from the space into the outside medium, the movement of said sliding rods being cyclicaly phase shifted with respect to each other, comprising a partition through which the rod passes disposed between its respective closed space and its first sealing means and forming with the latter a chamber of variable volume which is connected to the closed space via a pump actuated by the reciprocating movement of the outlet rod which maintains the gaseous pressure in the chamber at a value much lower than that of the closed space, but always greater than that of the outside medium, disposed successively along the rod from the closed space towards the outside medium are two dynamic seals placed between the rod and the bore passing through the partition, the first sealing means with the second dynamic seal defining the chamber and ensuring the absolute tightness thereof with respect to the

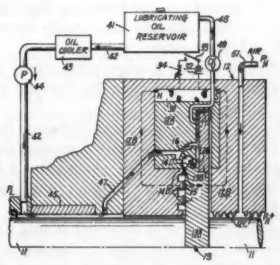


outside medium, the part of the rod which penetrates the closed space has a cross section, different from that of the part emerging from the partition towards the outside medium and is connected with the last part by a shoulder, the latter and the bore of the partition forming the piston and the cylinder of said pump, the pumps formed by these enclosures and non-return valves being series-connected so as to form a multistage pump the enclosure of the first pump being connected, via non-return valve mounted in the direction of the suction, to said chambers which are interconnected by short, wide ducts, and the enclosure of the last pump of the series being connected, via a non-return valve, to an auxiliary buffer space itself connected, via a respective non-return valve, to each of the closed spaces, the valves to which the said buffer space is thus connected being mounted in the direction of the gas discharge towards the closed spaces.

4,335,885
PLURAL FLUID MAGNETIC/CENTRIFUGAL SEAL

Hooshang Heshmat, Schenectady, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,432
Int. Cl.³ F16J *15/42, 15/56*
U.S. Cl. 277—13 **30 Claims**



1. A plural fluid magnetic/centrifugal-fluid seal for hermeti-

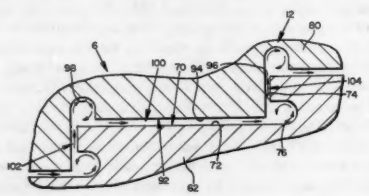
cally sealing the space between a rotating member and a close fitting spaced-apart stationary member comprising means formed on said members defining at least one magnetic pole-like close clearance magnetic seal gap region between opposed surfaces of the members, a high viscosity magnetically permeable ferromagnetic fluid normally disposed in said magnetic gap region with said rotating member at rest or low rotational speeds, magnetic field producing means magnetically coupled to at least portions of said rotating and stationary members, said magnetic seal gap region and said high viscosity magnetically permeable ferromagnetic fluid in a closed magnetic circuit, a circumferentially arranged centrifugal seal forming region radially disposed outwardly from said magnetic seal gap region and located between the rotating and stationary members, means in communication with said centrifugal seal forming region for receiving and pooling a low viscosity centrifugal sealing fluid, said centrifugal sealing fluid being centrifugally thrown outwardly during high speed rotation of said rotating member into said centrifugal seal forming region to thereby form a centrifugal hermetic seal through the medium of the fluid pooled between the two members by centrifugal force at high rotational speeds of said rotating member.

4,335,886

LABYRINTH SEAL WITH CURRENT-FORMING SEALING PASSAGES

Max Frey, and Paul B. Krebs, both of Portland, Oreg., assignors to Cornell Pump Company, Portland, Oreg.

Filed Jul. 22, 1980, Ser. No. 171,043
Int. Cl.³ F16J *15/44, 15/42*
U.S. Cl. 277—25 **9 Claims**



1. A labyrinth seal for sealing an impeller shaft within a pump housing comprising,

inner and outer annular, coaxial, relatively rotatable members disposed with the inner member fitting within the outer member, the outer member being adapted to be secured to the housing and the inner member being adapted to be secured to the shaft, said members having walls defining therebetween

a first axially extending sleeve-shaped passage,

a second axially extending sleeve-shaped passage having a diameter which is less than the diameter of the first passage, said second passage following the first passage and having one end adjacent but radially inwardly from an end of said first passage,

an annular disc-shaped passage substantially normal to the axis of the shaft intersecting the first and second sleeve-shaped passages,

an annular groove in one of said members at the intersection of said first and said disc-shaped passages facing said first passage and having a width which spans the width of the first passage and an outer margin of said disc-shaped passage, and

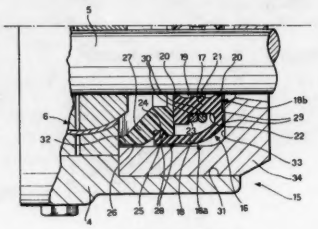
another annular groove in the other of said members at the intersection of said disc-shaped passage and said second passage facing said disc-shaped passage and, having a width which spans the width of the disc-shaped passage and an end margin of said second passage.

4,335,887

SEALING DEVICE FOR USE WITH FLEXIBLE DYNAMOMETRIC BARS

GianCarlo Benassi, Modena, Italy, assignor to Fiat Trattori S.p.A., Modena, Italy

Filed Oct. 22, 1980, Ser. No. 199,132
Claims priority, application Italy, Nov. 14, 1979, 53743/79[U]
Int. Cl.³ F16J *15/32, 15/38*
U.S. Cl. 277—84 **12 Claims**



1. In a flexible bar mounting arrangement including: a pair of supports; a central portion of said bar extending between said supports in a lubricated environment, and a pair of circular-section end portions of said bar projecting beyond said supports,

a sealing device, including a seating, which is fitted to each said end portion to separate said lubricated central portion from the exterior,

wherein the improvement consists in said sealing device including an elastomer sealing ring comprising:

a collar element having inner and outer surfaces;

respective internal circumferential sealing lips located at the ends of said collar element on its inner surface, said lips having free edge diameters less than the external diameter of said bar;

a bell-shaped element surrounding said collar element coaxially and being integral therewith at an attachment end corresponding to one said end of said collar element remote from said central portion of said bar, said bell-shaped element extending towards the other end of said collar element and being radially spaced therefrom to cooperate with said seating and effect a seal therebetween, and

resilient means for compressing said collar element against the surface of said flexible bar when said sealing ring is fitted thereto.

4,335,888

MECHANICAL SEAL

Kanji Ohba, and Shigenari Itoi, both of Kobe, Japan, assignors to Nippon Pillar Packing Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 938,690, Aug. 31, 1978, abandoned. This application Aug. 7, 1980, Ser. No. 175,880
Claims priority, application Japan, Mar. 20, 1978, 53-36503[U]
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—96.1 **9 Claims**

1. In a mechanical seal for sealing liquids which are most difficult to seal, comprising:

a movable seal ring mounted only for rotational movement and a stationary seal ring to be rotatably and slidably contacted with each other for sealing a liquid, the seal rings defining an annular sliding contact area;

a spring member for spring-loading one of said seal rings toward the other of said seal rings;

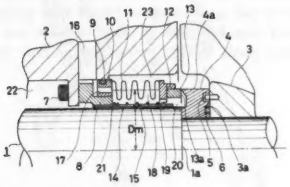
means for confining the liquid to be sealed in a first flow path which passes said seal ring on one side of said annular contact area, the liquid to be sealed being prone to unwanted coagulation under the influences of heat and pres-

sure so as to form a coagulated film in the sliding contact area which tends to thicken quickly and disrupt operation of the seal; and,

means for confining a coolant liquid in a second flow path which passes said seal rings on the other side of said annular contact area;

said mechanical seal characterized in that:

a smooth sealing end surface is formed at one end of one of said rotation seal ring and said stationary seal ring, and a sharp edge-like sealing end portion, having a wedge-shaped cross-section, in slidable contact with said smooth sealing end surface is formed on the other of said seal rings, said sealing end portion having a width of 0.1 to 0.3 mm (0.004 to 0.012 in), the sharp, edge-like shape tending to inhibit heat conduction from said contact area back through said end portion into said seal ring;



said seal rings are made from ceramic materials; and,

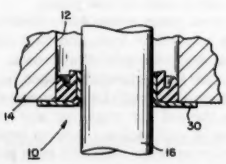
the spring face pressure to be imparted by said spring member to the annular sliding contact area between said sealing end surface and said sealing end portion is set to a value from 30 to 50 kg/cm^2 (427 to 711 lbs/in^2), despite the very sharp edge-like sealing end portion, the extremely high spring face pressure further tending to raise the temperature in the sliding contact area, whereby any of the liquid to be sealed which passes through the sliding contact area is effectively cut off from its flow by a rotary cutting action within the annular contact area and is carried away by the coolant flow before it can thicken and clog the seal, making it inoperable, notwithstanding the tendancy of the liquid to be sealed to coagulate under the pressure and temperature conditions present in the sliding contact area.

4,335,889

SHAFT SEAL WITH LINER FLANGE

Douglas A. Cather, Jr., Gastonia, N.C., and Martin E. Benjamin, Danielson, Conn., assignors to Garlock Inc., Longview, Tex.

Filed Jun. 27, 1980, Ser. No. 163,564
Int. Cl.^{3} F16J *15/32*
U.S. Cl. 277—152 **11 Claims**



1. An article comprising:

(a) a shaft seal having an annular sealing lip and consisting solely of a molded elastomeric body having a bore contacting surface and a liner of low friction material bonded to said body at least at said sealing lip; and

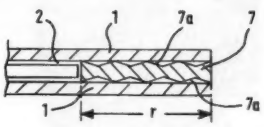
(b) said liner including a radial flange extending radially outwardly beyond said bore-contacting surface of said elastomeric body.

4,335,890

GASKET FOR CYLINDER HEAD

Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, Co. Durham, England

Filed Mar. 25, 1980, Ser. No. 133,844
Claims priority, application United Kingdom, Dec. 3, 1979, 7941630
Int. Cl.^{3} F16J *15/08*
U.S. Cl. 277—235 B **2 Claims**



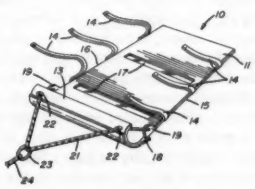
1. A gasket for sealing the joint between the cylinder block and the cylinder head of a wet liner internal combustion engine comprising a pair of outer metal plates, a composite metal spacer plate disposed between the two outer plates, and a sealing washer disposed between the two outer plates around each cylinder bore opening, said sealing washer formed on each axial face with circumferential serrations of V-shaped profile, the thickness of the washer measured over the peaks of the serrations being somewhat greater than that of the composite spacer plate whereas the thickness measured between the troughs of the serrations is significantly less than that of the composite spacer plate, said sealing washer being deformable under the clamping pressure of said plates so that the material in the peaks of the serrations flow into the troughs of the serrations.

4,335,891

GAME TRANSPORTATION DEVICE

Francis P. Alley, DeVite Trailer Park, Lot 3, Edinburg, Pa. 16116, and Michael T. Duffee, S. Beaver St., New Castle, Pa. 16101

Filed Mar. 28, 1980, Ser. No. 134,942
Int. Cl.^{3} B62B *15/00, 17/08*
U.S. Cl. 280—19 **3 Claims**



1. A game transportation device comprising a section of semiflexible sheet plastic material having a length greater than its width, one end of said section of material being curled upwardly, at least one pair of apertured tabs formed on the longitudinal edges of said section of material inwardly of said upwardly curved end, a semi-rigid thin plastic rectangular member attached to said upwardly curled end so as to conform therewith with one of its transverse edges extending below the plane of said section of material, a piece of rope attached at its ends to said apertured tabs and engaged in openings in said upwardly curved end and secured thereto, a second rope attached at one of its ends to said first mentioned rope so as to extend outwardly therefrom and a harness on the other end of said secondary rope.

4,335,892

CART WITH IMPROVED STORAGE-PREVENTING BASE

Daniel Berlin, Rydal, Pa., assignor to Roblin Industries, Inc., Battle Creek, Mich.

Filed May 2, 1980, Ser. No. 146,540
Int. Cl.[3] B62B *11/00*
U.S. Cl. 280—33.99 R 4 Claims

1. In a wheeled nestable shopping cart having a base and a goods-carrying basket supported thereon, the base including a generally planar basket support means that is operatively connected to but spaced above a pair of rear wheels and a pair of front casters, said base including a first U-shaped tubular member whose bight and adjacent portions of the legs of the U are shaped and arranged to provide the generally planar basket support means, and the portions of the legs of said first U-shaped member that are distal from the U's bight being formed to extend downwardly from the basket support means and terminating in laterally spaced upright legs positioned generally above the pair of rear wheels and to which said rear wheels connect, comprising the improvement wherein said base includes:

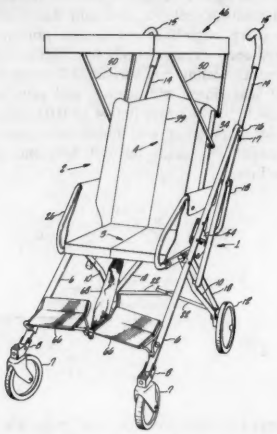
a second U-shaped member arranged and disposed so that its bight is spaced forwardly of and substantially below the basket support means, the second U-shaped member having elongated legs which extend rearwardly and diverge outwardly from the ends of the last-mentioned bight and being additionally arranged to incline upwardly and rearwardly from a point located adjacent said last-mentioned bight to a point at which the free ends of said last-mentioned legs directly fixedly engage a respective one of the legs of said first U-shaped member in the vicinity of the upper end of the respective upright leg, and a pair of rigid braces disposed adjacent opposite sides of the base for rigidly joining the basket support means to the legs of the second U-shaped member, each said brace having the upper end thereof rigidly joined to said leg portion of the planar basket support means and the lower end thereof rigidly joined to the inclined leg of said second U-shaped member at a location disposed intermediate the ends thereof, the region extending sidewardly between the legs of said second U-shaped member being open to prevent storage of goods on said base, the region extending between the upright leg of the first U-shaped member and the inclined leg of said second U-shaped member also being open and free of structure to prevent storage of goods on the base.

4,335,893

FOLDABLE INFANT CARRIER

Lee T. Carmichael, Pasadena; Richard E. Hyde, Palos Verdes Estates, and Gary L. Smith, Los Angeles, all of Calif., assignors to California Strolee, Inc., Compton, Calif.

Filed Sep. 28, 1979, Ser. No. 79,833
Int. Cl.[3] B62B *7/08*
U.S. Cl. 280—42 8 Claims



5. A foldable infant carrier capable of assuming a locked open position and a folded closed position which is foldable along a central vertical plane bisecting said carrier and extending from the front to the rear thereof, said carrier comprising in combination:

a. a main frame assembly, foldable along said central plane, having two front legs each having a wheel pivotally connected thereto, two rear legs each having a wheel rotatably connected thereto, support means for rigidly supporting the main frame assembly in the open position and handle means for carrying and pushing said infant carrier, said four leg members, support means and handle means being operably connected to each other to provide, in the open position, a rigid frame assembly for supporting and pushing an infant seat assembly connected thereto;

b. two backrest support brackets operably connected to said support means, said brackets having a plurality of notch means to engage and support a back rest in any one of at least two positions;

c. an infant seat assembly, foldable along said vertical plane, operably and adjustably connected to said main frame assembly and adapted to rigidly support an infant in an open position, said infant seat assembly comprising, in combination:

(1) a substantially rigid backrest portion adapated to be folded along said vertical plane;

(2) a backrest frame assembly connected to said backrest portion adapted to lock said backrest in a rigid open position, comprising in combination:

(a) two side support members each having an upper and lower end and each having support pins at the lower ends thereof for engaging any one of said notch means in said backrest support bracket;

(b) two cross brace members each pivotally connected to the lower end of one of said side support members and the upper end of the other of said side support members;

(c) locking cross members pivotally connected at one end thereof to the upper end of opposing said side support members and at the other end thereof within a slot in a trigger and latch mechanism, said trigger and latch mechanism operable to restrain the pivotal

movement of said cross members by means of a latch, retractably housed within said mechanism, which latch engages and restrains said cross members within said slot;

(3) a rigid seat portion adapted to be folded along said vertical plane;

(4) a seat frame assembly connected to said seat portion and rigidly connected to said main frame assembly;

(5) biasing means for biasing said seat portion towards the folded position and;

(6) connector means for connecting said seat portion to a footrest means;

d. footrest means foldable along said vertical plane and pivotally connected to said main frame assembly and to said seat portion by said connector means, and

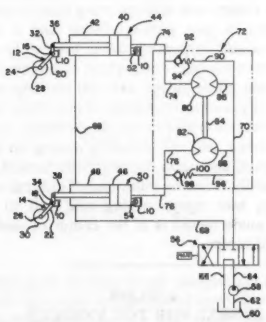
e. said trigger mechanism being adaptable to lock said main frame assembly and said backrest support means and said seat portion in said open position and to provide a handle for adjusting said backrest portion in the locked open position and adaptable to be released and providing a handle for folding said infant carrier along said vertical plane.

4,335,894

IMPLEMENT LEVEL LIFT SYSTEM WITH REPHASING VALVES

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Jun. 5, 1980, Ser. No. 156,890
Int. Cl.³ A01B *63/22*
U.S. Cl. 280—43.23 **2 Claims**



1. An implement lift system comprising:

a frame;

a plurality of wheel assemblies pivotally attached to the frame for controlling its elevation;

a ram connected between each wheel assembly and the frame;

a rotary flow divider connected in parallel to one end of each ram;

said rotary flow divider having a rotor for each of said rams and means physically interconnecting said rotors; and

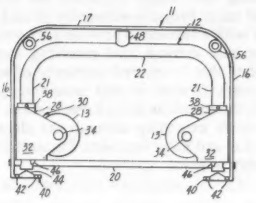
a pair of rephasing valves each associated with a rotor and a ram, each comprising a spring biased check valve arranged to permit flow only away from said associated ram, each rephasing valve connected as the sole by-pass across its associated rotor.

4,335,895

WHEELED CARRIER FOR SUITCASES AND THE LIKE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Continuation of Ser. No. 62,979, Aug. 2, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 240,093
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—47.13 R **5 Claims**



1. A wheeled carrier for articles such as suitcases and the like comprising:

a generally U-shaped support adapted to engage one side of such article,

a wheel mount swingably secured to said support and adapted to be swung from a closed nested position substantially within and coplanar with said support to an open position in a plane substantially normal to the plane of said support,

a ground wheel,

a fitting rotatably supporting said ground wheel,

said fitting being swingably mounted on said wheel mount for swinging said ground wheel from a working position with the plane of said ground wheel substantially normal to the plane of said wheel mount to a position coplanar with said mount, and

means removably connected to said mount for manual manipulation of said mount, whereby

when said means is removed said carrier may be arranged with the planes of said support, wheel mount and wheel all in coplanar relationship.

4,335,896

LUGGAGE CASE HAVING A DETACHABLE ROLLER ASSEMBLY

Sol Koffler, Providence, and William M. Berry, East Providence, both of R.I., assignors to American Tourister, Inc., Warren, R.I.

Filed Apr. 7, 1980, Ser. No. 138,186
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—47.17 **15 Claims**

1. A luggage case, comprising a pair of hinged sections, at least one of said sections including means for receiving a roller assembly thereon in detachable relation, spaced openings formed in said one section adjacent a corner thereof, said roller

assembly including a pair of roller brackets through which a roller axle extends for pivotally mounting said roller brackets thereon, a mounting tab secured to each of said roller brackets at an outer end thereof, a roller rotatably mounted on said axle between said roller brackets, resilient means for normally urging the portions of said roller brackets on which said mounting tabs are mounted away from each other, said roller brackets being movable inwardly against the action of said resilient means for locating said tabs in said openings for releasably mounting said roller assembly on said one section, wherein said roller projects outwardly of said one section for engagement with a surface to provide for convenient travel of said luggage case thereon, said receiving means including a mounting plate that is secured interiorly of said one section, spaced openings formed in said mounting plate and being aligned with the openings in said one section, the tabs of said bracket assembly extending through the aligned openings in said one section and mounting plate for positively locking said roller assembly in place.

4,335,897

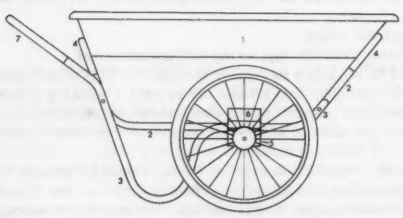
GARDEN CART WITH REMOVABLE CONTAINER

Henry J. Muller, Jr., 1730 Glen Oaks Dr., Santa Barbara, Calif. 93108

Continuation-in-part of Ser. No. 26,421, Mar. 2, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,506

Int. Cl.³ B62B *1/20*

U.S. Cl. 280—47.18 **1 Claim**



1. A multi-purpose garden cart comprising a tubular aluminum carriage having a cradle, front and rear U-shaped tubular end braces secured to the ends of said cradle, a pair of stands for supporting said cart, and a handle secured to said stands, said carriage mounting a transverse axle with large diameter wheels on opposite ends and supporting, by detachable engagement, a rigid yet resilient polyethylene container formed from a single sheet without seams or apertures and having a molded, outward protrusion to serve as a latch on both its front and rear faces; said container having the means for being engaged into said carriage by pressing it downwardly causing the resilient front end rear faces to depress inwardly until the latches, having passed over the front end rear tubular and braces of said carriage, snap back outwardly engaging beneath them; while the bottom of said container rests on said cradle and

means for of instantly detaching it from said carriage by pressing inwardly on either its front or rear face releasing said latches and lifting the container up and out of the carriage thus permitting its contents to be quickly and completely dumped directly into a truck bed or trash receptical or heaped on top of a mulch or leaf pile; and

the means, when secured in said carriage, of being adapted tilted forward and balanced in a lip-to-ground position permitting leaves and other garden waste to be raked directly into it; and

means for lifting heavier garden loads placed on its front face while in the tilt-forward position by rotating the carriage backwardly causing the load to slide down its slippery, steeply sloping front face; and

the additional capability, because of its right, sturdy and leakproof characteristics, of being utilized to mix, carry and dump liquid loads and, when detached from the carriage, of serving other uses around the home and garden such as a vat for mixing mortar, a tub for washing dogs or a wading pool for children.

4,335,898

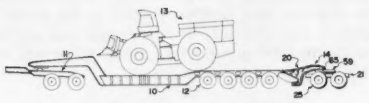
LOAD SHIFTER ASSEMBLY FOR TRAILERS

Andrew Orosz, and Kenneth Lesarge, both of Regina, Canada, assignors to Westank-Willock, a Division of Willock Industries Ltd., Regina, Canada

Filed May 12, 1980, Ser. No. 148,697

Int. Cl.³ B62D *53/00*

U.S. Cl. 280—81 R **24 Claims**



1. A load shifter assembly for heavy duty trailers comprising in combination a pick-up frame, means to detachably secure said pick-up frame to the rear end of the trailer, a suspension frame, a twin-axle-and-road-wheel assembly supporting said suspension frame, substantially vertical pivot means mounting said suspension frame to said pick-up frame for pivotal movement in a substantially horizontal plane relative to said pick-up frame, and self-centering means operatively extending between said suspension frame and said pick-up frame for assisting said suspension frame in returning to the in-line trailing position relative to the trailer, said self-centering means includes guide means mounted in said pick-up frame and a curved rail mounted across said suspension frame forwardly of the twin axles of said twin-axle-and-road-wheel assembly, said rail engaging upon said guide means, said rail curving in a substantially horizontal plane with a radius of curvature substantially equal to the distance between the substantially vertical pivot means and said rail, said rail including a ramp on each side of the center thereof, and upon the underside thereof, each ramp inclining upwardly from the outer end of said rail towards the center thereof, said ramps urging said rail to a position whereby said guide means is at the center of said rail at the junction of said ramps.

4,335,899

WHEEL FOR TOY VEHICLE

Roger F. Hiscock, 23 Metchley Park Rd., Edgbaston, Birmingham B152PQ, England

Filed May 7, 1980, Ser. No. 147,099

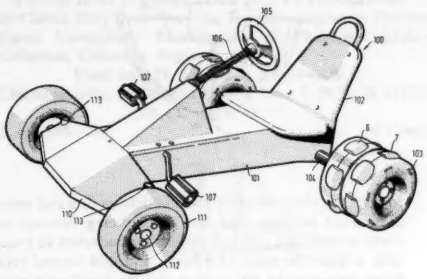
Claims priority, application United Kingdom, May 18, 1979, 7917437

Int. Cl.³ B62M *1/02*

U.S. Cl. 280—259 **4 Claims**

1. A pedal car comprising a frame carrying a seat and including a front axle carrying front wheels pivotally mounted for steering said car, said front wheels having a generally integral outer surface constructed to roll forward and backward along the plane of the wheel while resisting a lateral motion in a direction along the axis of rotation of the wheel, a steering wheel mounted adjacent said seat and adapted to steer said front wheels through linkage means connecting said steering wheel and said front wheels, a rear axle carrying driving

wheels and driven by pedal means drivably connected to said axle and mounted on said frame, each said driving wheel being carried by said rear axle by rotation therewith and comprising a circumferential portion, a hub for mounting said wheel on said rear axle and including a plurality of rollers, said rollers being mounted for free rotation about axles supported adjacent



said circumferential portion and positioned to provide that the axes of rotation of said rollers are at right angles to the hub axle, said rollers projecting through apertures in said circumferential portion whereby the said outer surfaces of the rollers are proud of the circumferential portion and form a ground-engaging surface of the wheel.

4,335,900

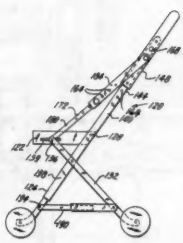
COLLAPSIBLE FRAMES FOR BABY CARRIERS

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 927,280, Jul. 24, 1978, Pat. No. 4,256,325, which is a continuation-in-part of Ser. No. 759,081, Jan. 13, 1977, abandoned. This application Dec. 1, 1980, Ser. No. 212,071

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—649 **6 Claims**



1. A collapsible stroller frame comprising, in combination, seat support means including spaced apart side portions, a rear portion, intermediate portion and front portion, a pair of spaced apart front leg members, said seat support means being pivotally connected to upper portions of said front leg members, a pair of spaced apart rear leg members upper portions of which include sliding means which are slidably engaged by and connected to said seat support means, handle support means comprising an upward extension of said front leg members, a lower portion of which is connected to said seat support means, and an upper portion of which is in telescoping relation to said lower portion, and side bracing means including lower bracing means in communication with said sliding means of said rear leg members, or a portion of said seat support means, and upper bracing means in telescoping relation to said lower bracing means and operatively connected to said upper portion of said handle support means, whereby upon moving said upper portion of said handle support means downwardly toward said lower portion thereby causing said upper bracing means to move downwardly toward said seat support means and said sliding means of said rear leg members to move toward the front portion of said seat support means carrying the rear leg members backwardly swinging said rear leg members upwardly toward the rear of said seat support means, said seat supporting means pivoting downwardly toward said front leg members, so that said front leg members and rear leg members extend in opposite directions when in folded or collapsed condition.

4,335,901

SUSPENSION OVERRIDE SYSTEM

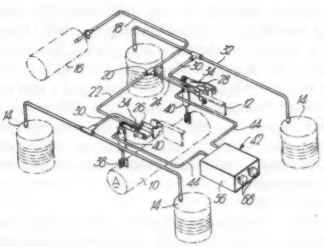
Herbert E. Gladish, Ottawa, Canada, assignor to E. B. Eddy Forest Products, Ltd., Ottawa, Canada

Filed Apr. 13, 1979, Ser. No. 29,848

Claims priority, application Canada, Jul. 27, 1978, 308247

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—711 **38 Claims**



1. In a system for altering the clearance height between sprung and unsprung masses of a vehicle being provided on each side thereof with fluid spring means positioned between said masses and regulating valve means for altering the fluid pressure in said spring means, the improvement in means for manually selectively altering said clearance height to achieve a desired elevation of the sprung mass relative to a reference elevation comprising, for each side of said vehicle:

actuator means for said regulating valve means comprising an actuator cylinder, an actuator member reciprocal therein so as to define an actuator chamber within said cylinder, and an actuator rod connected to said actuator member extending outwardly of said actuator cylinder;

means connecting one end of said actuator means to said regulating valve means and the other end to said unsprung mass;

master control means remote from said actuator means and having a control chamber therein;

operator actuable control means operative to alter the volume of said control chamber;

flexible conduit means interconnecting said actuator chamber and said control chamber; and

a generally incompressible fluid completely filling said conduit means, said actuator chamber and said control chamber;

whereby upon operation of said control means, a change in volume of said control chamber is translated via said fluid into a change in volume of said actuator chamber resulting in movement of said actuator cylinder relative to said actuator member, such movement actuating said regulating valve means to alter the fluid pressure in said fluid spring means and thereby alter said clearance height.

4,335,902
PASSIVE SEATBELT DRIVING MECHANISM

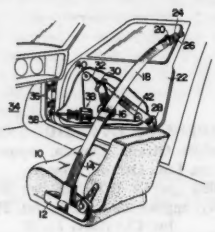
Masanao Motonami, Toyota, and Yoshiaki Ishikawa, Chiryu, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Continuation of Ser. No. 57,455, Jul. 13, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 277,725

Claims priority, application Japan, Jul. 19, 1978, 53-99329; Jul. 19, 1978, 53-99330; Jul. 19, 1978, 53-99331

Int. Cl.³ B60R *21/02*

U.S. Cl. 280—804 **11 Claims**



1. A passive seatbelt driving mechanism for automatically fastening webbings to or unfastening the same from an occupant of a vehicle of the type comprising a webbing driving means provided in a door of said vehicle which is driven by the opening and closing force of said door and a lost motion linkage provided between said door and said webbing driving means for decoupling the opening and closing force of said door from said webbing driving means when said door is opened beyond a predetermined amount, said lost motion linkage comprising:

a movable shaft;

a means for applying said opening and closing force of said door for getting on or off to said movable shaft to move said movable shaft;

a guide plate formed with a first groove portion for guiding said movable shaft at an initial stage of said door opening and with a second groove portion for guiding said movable shaft when said door is opened beyond said predetermined amount; and

a groove plate coupled to said webbing driving means and formed with an engagable groove portion which engages with said movable shaft when said movable shaft moves in said first groove portion and with a sliding groove portion in which said movable shaft slides when moving in said second groove portion whereby said webbing driving means receives said door opening or closing force to drive the webbing when said movable shaft is in said first groove portion and said engagable groove portion and said webbing driving means receives substantially no opening or closing force when said movable shaft is in said second groove portion and said sliding groove portion.

4,335,903
BOOK READER'S CLIP

David A. Collins, and Robyn A. Collins, both of 42 Disraeli St., Auckland, New Zealand

Filed Jul. 9, 1980, Ser. No. 167,441

Claims priority, application New Zealand, Jul. 16, 1979, 191020

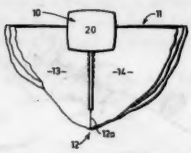
Int. Cl.³ B42D *9/00*

U.S. Cl. 281—46 **8 Claims**

1. A book readers clip including:

an elongate body portion extending to one side of, adjacent one end of, a neck portion; and a head portion being substantially shorter than said elongate body portion but extending to the same side of, adjacent the other end of, said neck portion, said head portion extending laterally of said neck portion to such an extent as to extend over adjacent pages of a book, and;

an elongate tail portion extending from the same side of the neck portion, and intermediate between and spaced apart from the body portion and the head portion; characterised



in that said elongate body portion defines first and second juxtaposed recesses, said first recess being between said body portion and said tail portion and adapted to receivably engage the spine of a book, and said second recess being between the tail portion and the head portion and adapted to receive the pages of a book.

4,335,904
TOGGLE MECHANISM CONNECTOR

Kenneth C. Saliger, and Martin B. Jansen, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

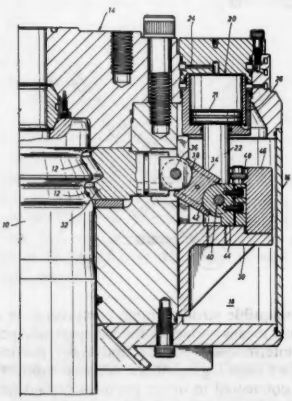
Continuation of Ser. No. 916,981, Jun. 19, 1978, Pat. No. 4,222,592. This application Sep. 2, 1980, Ser. No. 183,138

Claims priority, application United Kingdom, Jul. 11, 1977, 28947/77

The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.

Int. Cl.³ F16L *37/08*

U.S. Cl. 285—18 **8 Claims**



1. In a connector for connecting and disconnecting two members in which the first member includes a first locking means and the second member includes a double acting longitudinally moving piston for moving a second locking means into and out of locking engagement with said first locking means, the improvement of a locking toggle mechanism comprising,

said second locking means slideably carried by the second member for transverse movement toward and away from said second member for engagement and disengagement with said first locking means, and

a toggle linkage having a first pivot connection connected to the second locking means and a second pivot connection longitudinally actuated by the piston whereby the longitu-

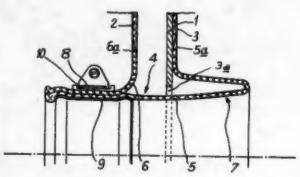
dinal movement of the second pivot connection transversely moves said second locking means and moves the second pivot connection into a past dead center locking position.

4,335,905

TANKS AND CONNECTING DUCTS THEREFOR

Jean-Claude Bac, Petit Quevilly, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Apr. 29, 1980, Ser. No. 144,829
Claims priority, application France, May 7, 1979, 79 11538
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—20 6 Claims



1. In a tank installation comprising a tank having at least one flexible wall which rests on a rigid apertured partition and a duct joined to said wall and passing through an aperture in said partition, the improvement that

(a) said duct is flexible;

(b) a folded-over end portion of said duct connects one end of said duct to said one flexible wall, said folded-over end portion being located within said tank, and

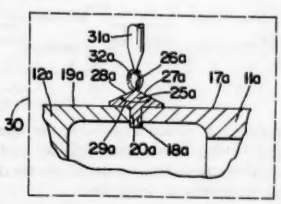
(c) a rigid pipe member is clamped to the other end of said duct at a location on the side of said apertured portion remote from said one flexible wall, the arrangement being such that risks of rupture of the duct due to violent shocks are minimised by its ability to move relative to said one flexible wall of said tank in more than a purely axial direction.

4,335,906

WELDABLE JOINT

Paul J. Cardinale, Auburn, and Leonard E. Partelow, Jr., Lyons, both of N.Y., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jul. 5, 1979, Ser. No. 55,114
Int. Cl.³ F16L *13/02*
U.S. Cl. 285—22 16 Claims



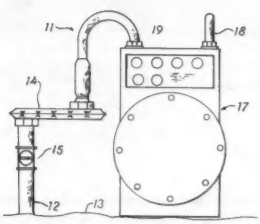
1. A device comprising first and second metallic cylindrical members having a preweld configuration and a postweld configuration; in said preweld configuration said members having axially facing surfaces defining a circumferential joint to be welded and generally smooth uninterrupted cylindrical surfaces extending axially away from said axially facing surfaces, an annular metallic cap disposed radially outward of said axially facing and cylindrical surfaces and encircling said joint, said cap contacting at least one of said members, said cap having an uninterrupted annular radially outermost crest radially aligned with said joint, said cap having first and second peripheral surfaces extending axially from said crest in opposite directions and extending radially inwardly from said crest toward said cylindrical surfaces at a predetermined slope, and said first and second peripheral surfaces being radially inward of said crest and radially outward of said cylindrical surfaces at all locations; in said postweld configuration substantially the entirety of said cap being melted integrally with the portion of said members adjacent said axially facing surfaces to form a welded joint, and said welded joint comprising only materials of said members and said cap.

4,335,907

METER CONNECTION APPARATUS

Bernard E. Scott, Billings, Mont., assignor to Industrial Systems, Inc., Billings, Mont.

Filed May 24, 1979, Ser. No. 42,068
Int. Cl.³ F16L *43/00*
U.S. Cl. 285—157 7 Claims



1. Meter connection apparatus including a generally semicircular conduit portion with first and second substantially parallel straight conduit portions extending from the ends of the semicircular conduit portion, said semicircular conduit portion having a radius which is a plurality of the conduit diameter, a collar member affixed adjacent the free end of the first of said straight conduit portions, said collar member including a peripheral flange section, said first straight conduit portion extending beyond said flange section of said collar member, a compression nut carried by said first straight conduit portion and associated with said collar member, said compression nut including an internally threaded portion of a size encompassing and extending beyond said flange section of said collar member, said compression nut also including a portion of smaller size than said internally threaded portion engageable with said flange section, an enlarged conduit portion extending from the second of said straight conduit portions, said enlarged conduit portion being large relative to said second portion, said enlarged conduit portion including an externally threaded second section at its free end engageable with an internally threaded compression nut, and the end portion of said externally threaded section including a tapered section of reduced diameter as compared with said enlarged portion providing an internal tapered section engageable with a resilient seal member disposed between said enlarged conduit portion and said second compression nut, said seal member including a tapered section adjacent said enlarged conduit portion engageable with said internal tapered section thereof.

4,335,908

PUSH-IN TUBE CONNECTOR

Donald G. Burge, 10320 Douglas Ave., Rte. 1, Plainwell, Mich. 49080

Filed May 19, 1980, Ser. No. 150,761
Int. Cl.³ F16L *33/20*
U.S. Cl. 285—250 12 Claims

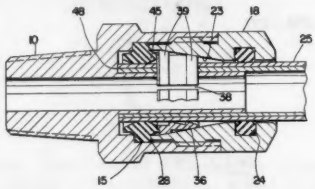
1. A preassembled fitting for tubes wherein a final fluid tight joint may be made solely by insertion of a tube therein, com-

prising a body having a bore therein and a tubing support forming an annular space for receipt of a tube, said bore having an entrance at one end of said body and terminating at a shoulder of lesser diameter than said bore,

a nut having a bore therein for receipt of a tube, said nut having an inwardly extending tubular portion terminating in an end ring of a diameter to fit within said body bore,

means for releaseably interengaging said nut and body at a position wherein said end ring of said nut is spaced a short distance from said body shoulder,

an elastomeric ring seal in said body member, said ring seal having a first sealing portion disposed between and in direct engagement with said shoulder and said end ring and adapted to be compressed thereby to provide sealing engagement between said body and said nut, said nut further having an internal frusto-conical surface between said bore and said end ring and disposed in said annular space,



a radially expandable and contractable sleeve-like gripping member having a frusto-conical outer surface in engagement with said inner surface of said nut and slidable relative thereto, said gripping member having gripping means on the inner surface thereof adapted for engagement with the outer surface of an inserted tube,

said ring seal having an abutment portion thereon radially inwardly of said sealing portion, said gripper member having abutment means at the axially inner end thereof adapted for direct engagement with said ring seal abutment portion to limit inward movement of said gripper member and to urge same axially outwardly toward a tube gripping position,

an o-ring seal in said nut bore for sealing the outer surface of an inserted tube, and

a further tube engaging portion on said ring seal adapted to be compressed by inserted tubing to seal said tube and to increase axial sealing pressure between said nut and body.

4,335,909

MULTIPLE LOCK FOR AN ENGINE COMPARTMENT COVER SYSTEM

Floyd A. Schmitz, Jr., Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Feb. 14, 1980, Ser. No. 121,434
Int. Cl.³ E05C *5/00*
U.S. Cl. 292—5 **12 Claims**

1. A locking linkage for the engine compartment of an off-road machine used for material handling, excavation, and the like, said machine having at least two openings providing access to the engine and engine accessories and at least two covers for those openings, comprising:

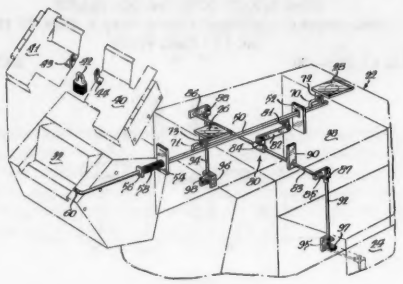
(a) a first shaft, said shaft being located within said compartment and guided axially in movement between a first position and a second position, the axis of said shaft being fixed relative to said covered openings and said machine;

(b) means, abutting a fixed member on said machine, for biasing said first shaft in a first position;

(c) lock means, attached to a fixed member on said machine, for holding said first shaft in said second position;

(d) at least one bell crank rotatable relative to a fixed member of said machine between a first position and a second position about a fixed axis perpendicular to the axis of said first shaft, one end of said bell crank being linked to said first shaft, shifting said first shaft from said first position to said second position rotates said bell crank about said fixed axis from said first position to said second position of said bell crank;

(e) a plurality of catch plates and cooperating catch bolts, said catch plates being joined to said covers on said machine, at least one of said catch bolts being joined to and moved by said first shaft, at least one of said catch bolts



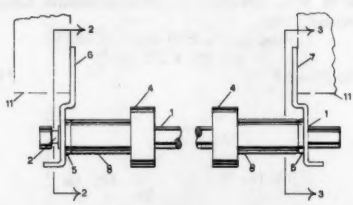
being joined to and moved by the other end of said bell crank, said catch plates and catch bolts being disengaged when said first shaft is in said first position, said catch plates and catch bolts being engaged when said first shaft is in said second position, the effect of holding said first shaft and said bell crank in said second position by said lock means being that said covers on said machine are locked in position relative to the fixed members of said machine whereby locking said first shaft in said second position locks said access covers to said machine.

4,335,910

DOOR RESTRAINING DEVICE

Lewis E. Massie, Box 79, Solana Beach, Calif. 92075

Filed Feb. 14, 1979, Ser. No. 11,793
Int. Cl.³ E05C *17/54*
U.S. Cl. 292—259 R **2 Claims**



1. A door restraining device to prevent the opening of a door, said device having an elongate rigid bar and a pair of brackets for selectively mounting the bar across the door opening wherein the improvement comprises:

(a) a cylindrical bar having two rotatable sleeves mounted thereon each sleeve positioned opposite the interface of the door and the frame;

(b) said sleeves being adjustably positioned by Collars mounted on the bar at each end of the sleeves; and,

(c) means for securing said sleeves to the bar, said positioning collars further comprising:

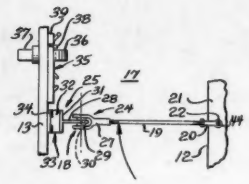
(d) a first pair of collars having outside diameters greater than the outside diameter of the sleeves; and

(e) a second pair of collars having outside diameters equal to or less than the outside dimension of the sleeves.

4,335,911
DOOR HOLDER

James L. Taylor, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00168, § 371 Date Feb. 19, 1980, § 102(e) Date Feb. 19, 1980, PCT Pub. No. WO81/02439, PCT Pub. Date Sep. 3, 1981
PCT Filed Feb. 19, 1980, Ser. No. 174,388
Int. Cl.[3] E05C 17/56
U.S. Cl. 292—262 20 Claims



1. In a door structure (10) having wall means (11) defining an opening (12), a door (13) provided with a locking handle (36), and means (14) for mounting the door (13) for swinging movement between a closed position extending across the opening and an open position, the improvement comprising:

a blocking element (19) having a mounting portion (20) and a distal portion (24);

means (44) swingably mounting said mounting portion to the wall means (11) adjacent said opening (12) for selective positioning in a second retracted position permitting free movement of the door (13) between said positions, and in a blocking position extending across said opening (12) with said distal portion (25) juxtaposed to the door (13) in the open position to prevent movement of the door (13) from the open position;

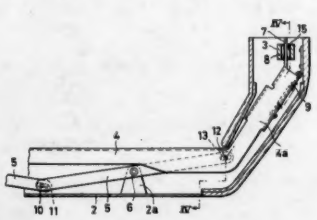
electromagnetic means (25) for releasably holding the blocking element (19) in the blocking position; and

control means for controlling said holding means (25) including a first switch (39) remote from the door and a second switch (38) adjacent the door, said control means including circuitry connecting said switches as an AND gate for releasing said holding means upon the opening of either switch and thereby permit the blocking element (19) to be returned to said retracted position.

4,335,912
DOOR LOCKING APPARATUS

Masahiko Koumura, Konan, and Hiroshi Mizuno, Iwakura, both of Japan, assignors to Rinnai Kabushiki Kaisha, Fukuzumi, Japan

Filed Feb. 13, 1980, Ser. No. 121,282
Claims priority, application Japan, Feb. 16, 1979, 54-17740[U]
Int. Cl.[3] E05C 1/12
U.S. Cl. 292—336.3 8 Claims

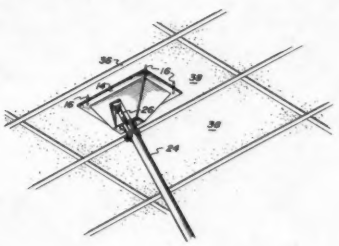


1. A door locking apparatus, comprising, in combination, a door having a main handle, at least one locking bolt carried by the handle for retaining the door in a latched position, a grip bar for operating the locking bolt, means mounting the grip bar on the handle for forward and rearward movement in a direction substantially at right angles to the handle, a pair of links within the handle, means pivotably connecting the intermediate portion of each link to the handle, means connecting one end of the links together for relative movement therebetween, and means connecting the other end of each link to the grip bar for relative movement therebetween, respectively, the links being diposed opposite to the forward direction of movement of the grip bar, whereby any portion of the grip bar may be gripped, and whereby the grip bar will have a substantially parallel uniform forward movement relative to the handle, thereby facilitating a smooth release of the locking bolt.

4,335,913
CEILING TILE REPLACING AND POSITIONING APPARATUS

George R. Lick, 106 Harrison St., Emmaus, Pa. 18049

Filed Sep. 11, 1980, Ser. No. 186,326
Int. Cl.[3] B25J 1/00
U.S. Cl. 294—19 R 6 Claims



1. An apparatus for positioning, removing and replacing ceiling tile comprising:

(a) a generally frustum-shaped frame, including a small and large base, said frustum wall of which includes a pair of depressions in opposed relationship proximate said frustum smaller base, said frustum's larger base terminating in an outwardly projecting encircling flange, said flange forming a platform on which ceiling tile may rest;

(b) a plurality of pins protruding generally perpendicular from said flange whereby said tile may be releasably skewered to said flange; and,

(c) handle means mounted to said frame at said frame smaller base, said handle means including a sleeve member pivotally disposed between and secured to said frame through said depression walls.

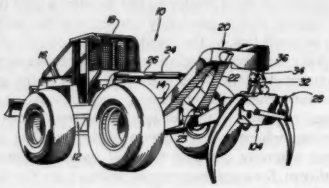
4,335,914
GRAPPLE PIVOT JOINT WITH SWING DAMPENER

Adrian C. Korbel, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 25, 1980, Ser. No. 180,933
Int. Cl.[3] B66C 1/00; F16F 7/04
U.S. Cl. 294—86 R 9 Claims

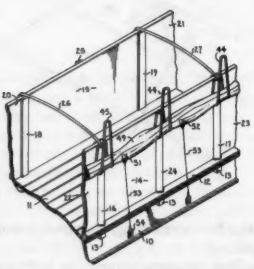
5. In a grapple suspension including a swivel link respectively pivotally connected to a support boom and a grapple head by first and second pivot pin means arranged crosswise to each other so as to define first and second pivot axes, an improved friction brake, comprising: said first and second pivot pin means respectively being non-rotatably fixed to the support boom and to the swivel link; the first pivot pin means including an end portion located beside the swivel link; a first brake disk non-rotatably mounted on the end portion of the first pivot pin means; a brake housing enclosing the end portion of the first pivot pin means and integrally fixed to the swivel link; a second brake disk located in the brake housing and non-rotatably

mounted thereto in a location adjacent the first brake disk; and a Belleville spring located in the brake housing and com-



pressed between a wall of the latter and one of the first and second brake disks.

4,335,915
TRUCK TRAILER LOAD COVER (TARPAULIN) RECEIVER
Merton C. Knapp, 108 S. Grant, Mount Ayr, Iowa 50854
Filed Apr. 24, 1980, Ser. No. 143,366
Int. Cl.³ B60J *11/00*
U.S. Cl. 296—98 **15 Claims**



1. A tarp holder for use with the normally vertical dividing stakes securing removable side panels for a flat bed truck trailer and, further, the normally vertical retaining stakes therefor, said dividing and retaining stakes being hollow centered, at least in the upper portion thereof, in order to receive therewithin the outboard, normally vertical ends of cross beams which overlie the trailer body, comprising:

an integral tarp holder removably engagable with one such stake having the following parts:

a first normally vertical insert length adapted to be removably inserted down into the hollow center of one of said stakes,

a second normally substantially horizontal inboard top member adapted to limit insertion of said insert length in said stake connected to the upper end of said length and further extending outboard of said stake,

a tarp retaining loop having a third normally substantially vertical inboard part connected at its upper end to the inner top member and extending downwardly therefrom,

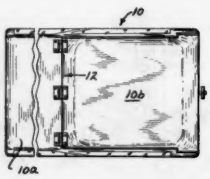
a fourth normally substantially horizontal bottom part connected at its inboard end to and extending outwardly away from said third inboard part and

a fifth normally substantially vertical outboard part connected at its lower end to the outboard end of the fourth bottom part and extending upwardly therefrom past the second inner top member,

the first length so configured in the portion thereof insertable within said stake as to permit the simultaneous presence in said stake therewith of a cross beam end, and

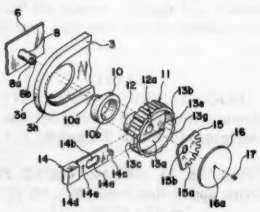
the fifth outboard part being of a length substantially greater than the third inboard part whereby to extend substantially upwardly thereabove and therepast and above said stake.

4,335,916
TRUCK BED CAP STRUCTURE
David R. Gutgsell, 450B Herbig La., Jasper, Ind. 47546
Filed Jun. 12, 1980, Ser. No. 158,736
Int. Cl.³ B60P *7/02*
U.S. Cl. 296—100 **3 Claims**



1. A topper for the bed of a truck having a cab comprising a base section having an upper horizontal surface supported on said truck bed and a secondary section pivotally positioned on said base section along said horizontal surface towards the region of said cab, said secondary section covering a preselected area of said truck bed and selectively movable in an uncovering relationship providing standing access by a user to any uncovered area of said truck bed, and said secondary section including a window in a rear vertical plane thereof providing adjacent surface supported user access.

4,335,917
RECLINING ARRANGEMENT
Sadami Izuno, and Isao Kiyomitsu, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd. and Delta Kogyo Co., Ltd., both of Hiroshima, Japan
Filed Oct. 3, 1979, Ser. No. 81,617
Claims priority, application Japan, Oct. 3, 1978, 53/136460[U]
Int. Cl.³ A47C *1/024*
U.S. Cl. 297—366 **20 Claims**



1. A reclining arrangement for a seat having a seat back reclinably mounted with respect to a seat cushion, which comprises:

a first arm fixed at a first end thereof to one of said seat back and said seat cushion;

a second arm;

a shaft pivotally connecting said second arm to the other of said seat back and said seat cushion at a point adjacent a first end of said second arm;

a rough adjusting mechanism pivotably connecting the second end of said first arm to said first end of said second arm for stepwise rough adjustment of the folding angle of said seat back with respect to said seat cushion; and

a fine adjusting mechanism for mounting the second end of said second arm on said other of said seat back and said seat cushion and for rotating said second arm about said

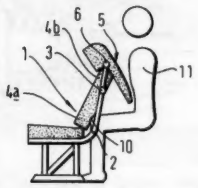
shaft to adjust the angle formed about said shaft between said second arm and said other of said seat back and said seat cushion.

4,335,918

VEHICLE SAFETY SEAT

Douglas J. Cunningham, Lutterworth, England, assignor to BSG International Limited, Birmingham, England

Filed Sep. 10, 1980, Ser. No. 185,815
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—216 4 Claims



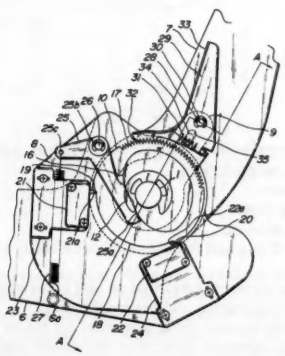
1. A safety seat for a vehicle comprising a frame, a back portion mounted for pivotal movement relative to the frame so as to be movable forwardly by knee pressure of a rearwardly seated occupant due to the force exerted by said occupant's knees when a pre-determined vehicle deceleration is exceeded, and a flap pivotally mounted on the frame and engaging with the back portion so that, when said pre-determined vehicle deceleration is exceeded and said back portion is pivoted forwardly said flap portion is deployed so as to confront the part of said occupant's torso above the lap.

4,335,919

SEAT RECLINING DEVICE

Hideyuki Nagashima, Yokohama, and Ken Kamijo, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 26, 1980, Ser. No. 124,785
Claims priority, application Japan, Mar. 6, 1979, 54/28845[U]
Int. Cl.³ A47C *1/025*
U.S. Cl. 297—362 3 Claims



1. A seat reclining device for a seat cushion plate having a reclining arm which is reclinable in two opposed directions of inclination, the device comprising;

a memory wheel pivotaly attached to and freely rotatable on the reclining arm, said memory wheel including an integrally formed reset cam;

an engagement member coupled to said reclining arm and adapted to be brought into engagement with the memory wheel under application of a bias force so that said memory wheel rotates together with said reclining arm in either direction of inclination, said engagement member including a handle which when operated releases the engagement member from engagement with the memory wheel against the influence of the bias force;

a reset lever engageable with said reset cam under the force of a spring to rotate said reset cam and thereby said memory wheel to a rotary, memorized position relative to the reclining arm when said handle is operated;

switch means mounted on said seat cushion plate and contacting said memory wheel for detecting the direction of inclination of the reclining arm from the memorized position indicated by the memory wheel; and

motor means for driving the reclining arm in a direction opposite the detected direction of inclination to the memorized position in response to said switch means,

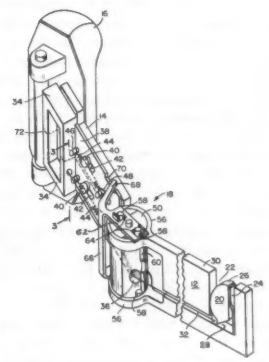
so that any reclined position of the reclining arm may be memorized by operation and release of the handle of the engagement member, the reclining arm thereafter being reclined in either of two opposed directions and returned to the memorized position by said motor means.

4,335,920

HEADREST FOR A DENTAL CHAIR

Emil Hirth, Malsch, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,869
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932343
Int. Cl.³ A61G *15/00*; A47C *1/10*
U.S. Cl. 297—408 11 Claims



1. In an adjustable headrest for dental chairs including a tongue adapted for sliding insertion into the backrest of a dental chair, a headrest support journaled to the tongue, a first lock at the journal of the headrest support to the tongue for holding the headrest support at a selected articulated position with respect to the tongue and a second lock between the tongue and backrest for holding the tongue at a selected position relative to the backrest, the improvement comprising:

(a) an operator movably mounted to the headrest support, said operator being manually movable with respect to the headrest support from a first to a second position;

(b) means biasing said operator towards said first position;

(c) spring elements urging each of the first and second locks to a locked position;

(d) a cable operated release for one of the locks, the cable of said release having one end connected to said operator;

(e) a lever operated release for the other of said locks, said lever operated release having a lever arm rotated by said operator; and

(f) said cable being pulled and said lever arm being rotated

upon movement of said operator to said second position for releasing both the first and second locks.

4,335,921

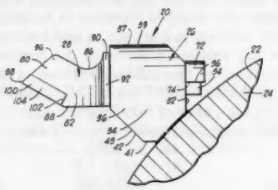
CUTTING HEAD FOR A PAVED ROADWAY RESURFACING APPARATUS

George W. Swisher, Jr., and Thomas L. Steele, both of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 803,559, Jun. 6, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,470

Int. Cl.[3] E21C 35/18

U.S. Cl. 299—86 4 Claims



1. The combination of a support block having an external surface and usuable with a first cutter desired to be nonrotatably mated with the support block and a second cutter desired to be rotatably mated with the support block, wherein:

the support block has a substantially circular bore therethrough intersecting the external surface of the support block at a first end and at a second end of the support block and extending therebetween, wherein the circularity of said bore is maintained between said first end and said second end, wherein the support block is characterized as having shoulder means on the external surface thereof, and wherein the shoulder means of the support block is formed by a portion thereof disposed on the second end thereof, said portion partially occluding the bore extending through the support block;

the first cutter has a shank sized to rotatably mate with said bore and has shoulder means thereon sized and arranged to mate with the support block shoulder means when the shank of the first cutter is mated with the bore of the support block, both of said shoulder means being located and arranged to prevent rotation of the first cutter when the shank of the first cutter is in said bore, wherein the shank of the first cutter has a first end adjacent the first end of the support block and a second end adjacent the second end of the support block when the shank of said first cutter is mated with the bore of the support block and wherein the first cutter includes an axial lug connected to the second end of the shank and protruding from the bore formed through the support block to engage the shoulder means on the support block; and

the second cutter has a shank sized to rotatably mate with said bore and no shoulder means engaging the support block shoulder means when the shank of the second cutter is mated with the bore of the support block, whereby the second cutter will rotate in the support block.

4,335,922

PRESSURE CONTROL UNIT

Volker Berisch, Hattersheim, and Karl Keiner, Schöffengrund, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,377

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927902

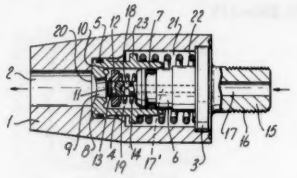
Int. Cl.[3] A60T 11/34

U.S. Cl. 303—6 C 37 Claims

1. A pressure control unit for motor vehicle brake systems disposed in a pressure medium connection between a master cylinder and at least one slave cylinder of a first hydraulic brake circuit comprising:

a housing having a longitudinal axis;

a differential piston disposed in a bore of said housing having a pressure medium passage between an inlet chamber and an outlet chamber, said piston being acted upon by the force of at least one control spring, said piston being a hollow cylinder coaxial of said axis having one end



thereof slidably sealed in said bore and the other end thereof slidably sealed to the outer surface of a plug disposed in said bore coaxial of said axis and immovably secured to said housing, said piston including adjacent said one end thereof a radial inwardly projecting collar separating said inlet chamber and said outlet chamber; and

a valve having a valve closure member disposed at the end of said plug adjacent said collar operable dependent on the displacement of said piston.

4,335,923

BEARING HOUSING SUPPORT

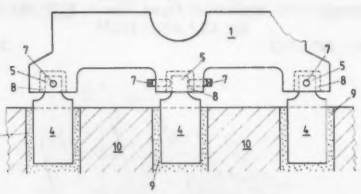
Wolfgang Dömer, Schneisingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 12, 1980, Ser. No. 186,548

Claims priority, application Switzerland, Oct. 3, 1979, 8911/79

Int. Cl.[3] F16C 35/02, 23/02

U.S. Cl. 308—15 6 Claims



1. A bearing housing support arrangement, especially for turbomachines, comprising:

a foundation;

foundation plates;

a bearing housing;

means for fixing said foundation plates directly to said foundation;

adjustment elements supported on said foundation plates for vertically adjusting said bearing housing;

said bearing housing being supported by means of said adjustment elements upon said foundation plates on said foundation;

horizontal fixing means for horizontally fixing said bearing housing;

said horizontal fixing means comprising holding blocks and adjustment members;

said holding blocks being mounted on the foundation and being engaged by said adjustment members;

said adjustment elements for the vertical adjustment of said bearing housing cooperating with said foundation plates

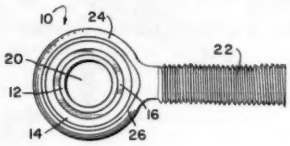
and said foundation and said horizontal fixing means cooperating with said bearing housing serving for adjustment of the bearing housing in all planes.

4,335,924

WEAR RESISTANT BEARING

Albert R. McCloskey, Fairfield, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Filed Nov. 19, 1980, Ser. No. 208,456
Int. Cl.³ F16C *23/04*
U.S. Cl. 308—72 13 Claims



1. A bearing assembly comprising

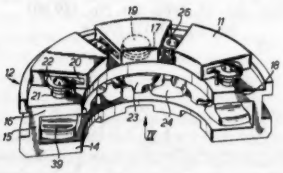
a race member having a spherical surface, said surface being formed of zinc-plated metal base material having a substantially continuous chromium skin layer and a chromium enriched subsurface layer of said zinc-plated metal immediately below said chromium skin layer.

4,335,925

THRUST BEARING

Peter G. Stopp, Hillingdon, England, assignor to The Glacier Metal Company, Limited, Middlesex, England

PCT No. PCT/GB79/00173, § 371 Date Jul. 2, 1980, § 102(e) Date Jul. 2, 1980, PCT Pub. No. WO80/00994, PCT Pub. Date May 15, 1980
PCT Filed Oct. 31, 1979, Ser. No. 197,349
Claims priority, application United Kingdom, Nov. 2, 1978, 42945/78
Int. Cl.³ F16C *17/06*
U.S. Cl. 308—160 9 Claims



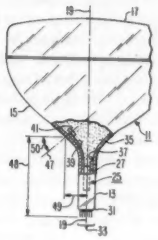
1. A thrust bearing comprising a ring of thrust pads, supporting bars, each supporting one of said thrust pads, and a ring of rockers, each adjacent pair of said rockers having ends overlapping and supporting respective ends of one of said supporting bars, all of said rockers and said supporting bars being identical components, the improvement comprising that said overlapping parts of said ends at one side of said components are each formed with an arcuate ridge, in such a way that where respective ends of a rocker and supporting bar overlap, there are two abutment regions where said ridges cross one another, while at the other side of said rocker and said supporting bar, said components are shaped such that there is a single abutment region.

4,335,926

METHOD FOR VAPORIZING GETTER MATERIAL IN A SUCCESSION OF CATHODE-RAY TUBES

Douglas E. Griesemer, Sr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,216
Int. Cl.³ H01J *9/39*
U.S. Cl. 316—3 8 Claims



1. In a method for vaporizing getter material in a succession of cathode-ray tubes of different sizes and/or shapes, each of said tubes having a longitudinal tube axis and comprising an envelope and a getter container adjacent to the inner surface of said envelope, said getter container having a container centerline, said method including, for each tube,

(i) positioning an induction coil having a coil centerline adjacent to the outer surface of said envelope opposite said getter container,

(ii) and energizing the positioned induction coil so as to heat said getter container by induction and to vaporize getter material therefrom,

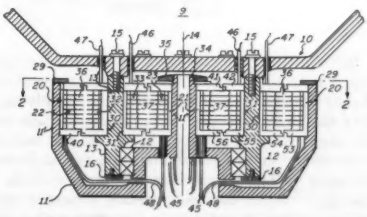
the improvement comprising permanently fixing the getter container of each tube in said succession in such position that said container centerline intersects the outer surface of said envelope at substantially the same distance from said longitudinal tube axis as each of the other tubes in said succession.

4,335,927

MULTI-CIRCUIT ROTARY ELECTRICAL CONDUCTOR ASSEMBLY

Terry S. Allen, and Peter E. Jacobson, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,243
Int. Cl.³ H01R *39/00*
U.S. Cl. 339—5 R 6 Claims



1. A conductor assembly for conducting the electrical energy of a plurality of electrical circuits across the axis of rotation of a rotary joint comprising:

a first member rotatable about said axis of rotation having a first cylindrical surface and having a second cylindrical surface of greater diameter than said first cylindrical surface,

a second member rotatable about said axis of rotation, having a third cylindrical surface and a fourth cylindrical surface

which are disposed between the first and second cylindrical surfaces of said first member,

at least a first pair of circular, coplanar, electrically conductive rings, one thereof being disposed on the first cylindrical surface of said first member and the other thereof being disposed on the third cylindrical surface of said second member, the respective diameters of said first pair of rings providing a first relatively large radial gap therebetween,

at least a second pair of circular, coplanar, electrically conductive rings, one thereof being disposed on the second cylindrical surface of said first member and the other thereof being disposed on the fourth cylindrical surface of said second member, the respective diameters of said second pair of rings providing a second relatively large radial gap therebetween.

at least one resilient, filamentary, conductive circular loop disposed in each of said first and second gaps having a free diameter greater than the radius of said gap whereby said loops produce compressive forces on said rings for providing electrical conductivity between said pairs of rings,

the relative diameters of said first and second pairs of rings being such that they lie in a substantially common plane normal to said axis,

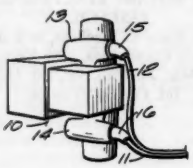
whereby said plurality of circuits are accommodated without substantially increasing the length of said conductor assembly along said axis.

4,335,928

HIGH VOLTAGE CONNECTOR FOR X-RAY EQUIPMENT

David M. Barrett, Brookfield; William D. Love, Waukesha, and Joseph L. Donaldson, Milwaukee, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,104
Int. Cl.³ H01R *4/00*
U.S. Cl. 339—94 C **11 Claims**



1. A high voltage cable connector including a receptacle comprising a generally tubular insulating body that is closed at one end and open at its opposite end and has a radially extending surface surrounding its open end, an insulating cable terminal sleeve having a body portion for fitting into said receptacle with an interspace remaining between the sleeve and the receptacle for being occupied by a fluid dielectric medium, said sleeve having a radially extending surface secured in spaced apart relation relative to said radially extending surface on the receptacle when the sleeve is inserted in the receptacle,

means for providing a seal between said radially extending surfaces, and

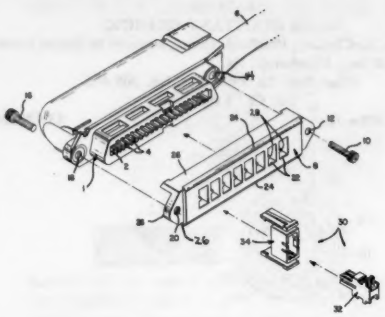
the improvement comprising a compressible and expansible element disposed between said sleeve and receptacle in contact with the dielectric medium in said interspace for compressing and expanding with thermally induced increasing and decreasing, respectively, volumetric changes of the medium.

4,335,929

LINE ASSIGNMENT MODULE

Lynn W. Abernethy, Advance, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 6, 1980, Ser. No. 147,030
Int. Cl.³ H01R *11/20, 13/518*
U.S. Cl. 339—97 R **5 Claims**



1. A kit of parts for tapping selected receptacle contacts of a receptacle connector terminated to individual conductors of a telephone cable, comprising:

a face plate having one or a plurality of plug receiving openings for mounting over a plug receiving cavity of a receptacle connector containing multiple pairs of receptacle contact terminals,

a plug insertable through a selected said plug receiving opening and into a portion of said plug receiving cavity, said plug having one or more pairs of plug contact terminals for frictionally engaging respective said receptacle contact terminals, said plug contact terminals having slotted plate portions for connection to insulated conductors and

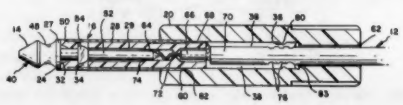
a housing for enclosing said plug and for retaining said insulated conductors in said slotted plate portions, said housing latching to said face plate.

4,335,930

TOOLLESS PHONE PLUG

Steven Feldman, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 16, 1980, Ser. No. 159,901
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—183 **14 Claims**



1. A phone plug of the type having axially aligned discrete first and second conductive surfaces thereon, said plug comprising:

a dielectric plug body having a first end, a second end, a cylindrical surface lying between said ends, and a bore extending axially therethrough from said first end to said second end,

a conductive tip member having a first end, a second end, and a tapered head at said first end which forms said first conductive surface, a neck adjacent to said head, and a shank lying between said neck and said second end, said shank having a diameter substantially equal to the bore in the dielectric plug body, said shank fitting into said bore with

the neck of the tip member proximate to the first end of the plug body,

an electrically conductive tubular sleeve which forms said second conductive surface, said sleeve having a first end, a second end, an inside diameter substantially equal to the diameter of the cylindrical surface, and an outside diameter substantially equal to the diameter of said tapered head on said tip member, said sleeve fitting over said cylindrical surface of said plug body with said first end of said sleeve proximate to said first end of said plug body and spaced from said tip member,

resilient latching means effective between said tip member and said plug body to retain said shank in said bore, said plug body being composed of resilient material,

means for terminating a first conductor to said conductive tip member,

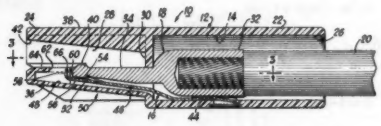
means for terminating a second conductor to said conductive tubular sleeve.

4,335,931

POWER CABLE CONNECTOR WITH RETENTION SPRING

Joseph D. Kinnear, Western Springs, Ill., assignor to Brad Harrison Company, LaGrange, Ill.

Filed Jul. 30, 1980, Ser. No. 173,603
Int. Cl.³ H01R *13/422*
U.S. Cl. 339—217 S **10 Claims**



1. In a power cable connector for battery cables and the like;

a housing formed of electrically insulating material;

at least one terminal receiving cavity extending through said housing in a longitudinal direction between forward and rear ends of the housing;

a terminal longitudinally insertable into said cavity from the rear end of said housing and including a contact portion adjacent the forward end of the terminal and a cable attachment structure adjacent the rear end of the terminal;

a cantilever spring including a base portion mounted in said housing and including a resiliently flexible biasing portion extending in the longitudinal direction toward the contact portion of said terminal and disposed between a wall of said cavity and said terminal;

a latching structure defined on said biasing portion engageable with said terminal to prevent withdrawal of said terminal from said cavity;

a release tongue defined on said biasing portion permitting said biasing portion to be flexed in a transverse direction away from said terminal and toward said cavity wall to disengage said latching structure;

and the improvement comprising:

a barrier portion defined on said release tongue for covering the gap formed between said terminal and said biasing portion upon disengagement of said latch structure;

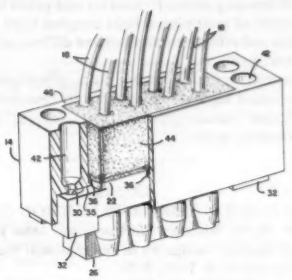
said barrier portion comprising a segment of said release tongue extending in a transverse direction away from said cavity wall and overlying a transverse wall of said terminal.

4,335,932

ELASTOMERIC POTTING SHELL

Henry O. Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harriburg, Pa.

Filed Feb. 29, 1980, Ser. No. 125,824
Int. Cl.³ B29C *6/04*; H01R *13/504*
U.S. Cl. 339—218 M **6 Claims**



1. A potting shell of elastomeric material, said potting shell comprising:

a series of interconnected walls forming a closed profile that defines an open-ended central chamber, said central chamber having a connector-receiving end and a rearward end, said connector-receiving end being profiled to receive a portion of a rigid connector housing; and

a resilient inwardly directed annular flange adjacent said connector-receiving end, said annular flange defining a profile of smaller area than that of said portion of said housing whereby,

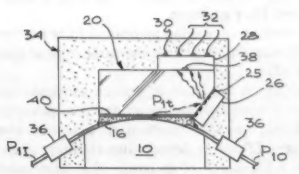
when said connector-receiving end receives said portion of said housing therein, said annular flange is deflected in a direction away from said connector-receiving end, said annular flange thereby wipingly engaging said portion of said housing as an expandable seal so that potting material introduced into said central chamber from said rearward end is prevented from flowing out of said central chamber at said connector-receiving end.

4,335,933

FIBER OPTIC WAVELENGTH DEMULTIPLEXER

John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 16, 1980, Ser. No. 160,395
Int. Cl.³ G02B *5/172*; H04B *9/00*
U.S. Cl. 350—96.19 **18 Claims**



1. A fiber optic directional demultiplexer for tapping off predetermined portions of wavelength optical energy from a single optical fiber and demultiplexing the optical energy comprising:

a curved form for supporting an optical fiber and shaping a portion thereof to a predetermined segment of a circle;

a single optical fiber mounted on said form;

means for affixing the optical fiber along a portion thereof to the curved portion of the form of a selected radius of

curvature, the fiber and affixing means in the center section of the curved portion of the fiber being lapped and polished to a preselected depth of penetration into the fiber to develop a planar surface;

prism means having a face of a predetermined characteristic angle affixed to said planar surface in contact with the optical fiber and affixed thereto by means of an optically transparent adhesive;

light diffracting means formed on said prism face in line with the path of multiplexed light coupled from the fiber to the prism and effective to reflect and diffract selected portions of said light; and

photosensitive means having plural photosensitive elements positioned adjacent said prism to respond selectively to different wavelengths of light directed from the light diffracting means.

4,335,934

SINGLE MODE FIBRE AND METHOD OF MAKING

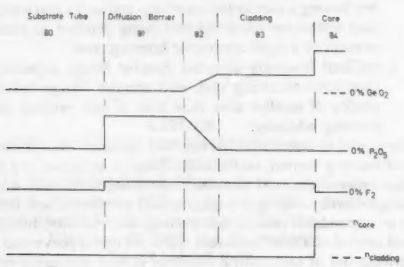
Philip W. Black, Bishop's Stortford, and John Irven, Stansted, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,943

Claims priority, application United Kingdom, Oct. 29, 1979, 7937402

Int. Cl.³ G02B *5/172*; C03B *37/075*

U.S. Cl. 350—96.33 **10 Claims**



1. A method of making an optical fiber preform suitable for use in the manufacture of single mode optical fiber, comprising the steps of:

despositing, by vapor reaction, on the bore of a silica substrate tube, a layer of fluorine doped silica cladding glass containing at least 0.5 mole % germania and having a refractive index not exceeding that of pure silica;

depositing, by vapor reaction, on said layer of cladding glass, a layer of germania doped silica core glass; and,

collapsing the bore of the tube to form a solid cross-section optical fiber preform.

10. A method of making an optical fiber preform suitable for use in the manufacture of single mode optical fiber, comprising the steps of:

depositing on the bore of a silica substrate tube a diffusion barrier layer containing an oxide of phosphorus,

depositing, by vapor reaction, on said diffusion barrier layer a layer of fluorine doped silica cladding glass containing at least 0.5 mole % of an oxide of an element for which the fundamental vibrational absorption of the bond between oxygen and that element lies at a longer wavelength that that of the bond between oxygen and silicon, and oxide of phorphorus in an amount not exceeding 0.5 mole %, the mole percent of said oxide of phosphorus in said diffusion barrier layer being higher than that of said cladding glass, said cladding glass having a refractive index not exceeding that of pure silica;

depositing, by vapor reaction, on said layer of cladding glass, a layer of silica core glass containing an oxide of an element for which the fundamental vibrational absorption of the bond between oxygen and that element lies at a longer wavelength than that of the bond between oxygen and silicon; and

collapsing the bore of the tube to form a solid cross-section optical fiber preform.

4,335,935

ARRANGEMENT FOR THE INDUCED ABSORPTION OF ELECTROMAGNETIC RADIATION

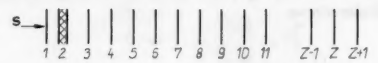
Hubert Pohlack, Jena, German Democratic Rep., assignor to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Apr. 25, 1980, Ser. No. 143,574

Claims priority, application German Democratic Rep., Apr. 27, 1979, 212541

Int. Cl.³ G02B *5/28*

U.S. Cl. 350—166 **4 Claims**



1. In an arrangement for the absorption of electromagnetic radiation of a spectral interval including a selectable wavelength λ, comprised of two radiation-permeable materials and one absorbing layer that is very thin as compared to the wavelength, the improvement wherein non-absorbing or only slightly absorbing λ/4 interference layers of low refractive index single layers and high refractive index single layers of refractive indicies n_n and n_h respectively are alternately arranged in the direction of the incident radiation following said absorbing layer, and that said absorbing layer has a thickness d and an absorption coefficient k such that the relationship

$$n_1^2A-2n_1B+C=0$$

is satisfied,
where

$$A=1-(\sin n\chi)^2+(\sin hk\chi)^2$$

$$B=\tfrac{1}{2}(k \sin 2n\chi+n \sin h2k\chi)$$

$$C=(n^2+k^2)[(\sin n\chi)^2+\sin hk\chi)^2]$$

and where $\chi=(2\pi/\lambda)\cdot d$, n is the refractive index of said absorbing layer, and n_1 is the refractive index of the medium positioned in front of said absorbing layer.

4,335,936

MATRIX ELECTRODE STRUCTURE IN A MULTI-LAYER MATRIX TYPE LIQUID CRYSTAL DISPLAY

Keisaku Nonomura, Nara; Hisashi Uede, Yamatokoriyama; Tomio Wada, and Toshiaki Takamatsu, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,782

Claims priority, application Japan, Oct. 14, 1977, 52-123642; Mar. 23, 1978, 53-34429

Int. Cl.³ G02F *1/133*

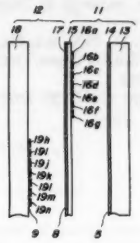
U.S. Cl. 350—335 **2 Claims**

1. A multilayer matrix type liquid crystal display having front and rear major surfaces, comprising:

a first liquid crystal cell including a first plurality of column electrodes and a first group of row electrodes oriented substantially perpendicular to said first plurality of column electrodes, all of the row electrodes in said first liquid crystal cell being arranged within a first area and collectively defining said first group of row electrodes; and

a second liquid crystal cell stacked over said first liquid crystal cell and including a second plurality of column electrodes and a second group of row electrodes oriented substantially perpendicular to said second plurality of column electrodes, all of the row electrodes in said second

liquid crystal cell being arranged within a second area and collectively defining said second group of row electrodes, the first area and the second area, defining the first group of



row electrodes and the second group of row electrodes, respectively, not overlapping in a direction substantially perpendicular to the major surfaces of said liquid crystal display.

4,335,937

ELECTRODE ASSEMBLY OF A LIQUID CRYSTAL DISPLAY

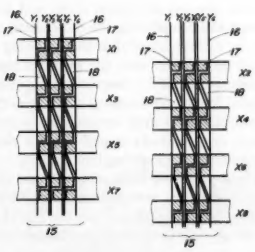
Toshiaki Takamatsu, Nara; Keiichiro Shimizu, Yamatokoriyama; Tomio Wada, and Keisaku Nonomura, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,333

Claims priority, application Japan, Nov. 11, 1977, 52-151132[U]

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **2 Claims**



1. An electrode structure for a matrix-type liquid crystal display including a first group of spaced parallel electrodes disposed in a first plane, a second group of spaced parallel electrodes disposed in a second plane and orthogonally crossing said first group of electrodes, said first and second groups of electrodes being disposed opposite each other and spaced with liquid crystal material interposed therebetween, each electrode of said first group of electrodes comprising:

a wire extending transversely to said second group of electrodes, said wire defining a continuous, electrically-conductive path of a predetermined width in said first plane;

a first electrode portion disposed opposite to the electrodes in said second group connected to and extending from said wire in said first plane; and

extension electrodes connected to and extending from said wire in said first plane in regions between said first electrode portions which are not opposite to an electrode in said second group, said extension electrodes defining an electrically-conductive path which is wider in said first plane than the conductive path defined by said wire.

4,335,938

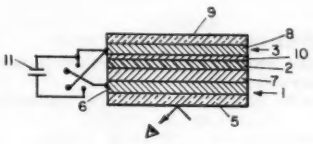
ELECTROCHROMIC CELLS WITH IMPROVED ELECTROLYTE SYSTEM

Robert D. Giglia, Rye, N.Y., and Sun Y. Huang, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 30, 1979, Ser. No. 70,753

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **10 Claims**



1. In an electrochromic device comprising a polymeric current-carrier-permeable layer in ion-conductive contact with a layer of persistent electrochromic inorganic oxide with both of said layers disposed between electrode layers and means for alternately applying electric fields of opposite polarity across said electrodes for changing the coloration in said electrochromic layer, the improvement wherein said current-carrier-permeable layer comprises a layer of polymeric electrolyte consisting of poly(2-acrylamido-2-methylpropane sulfonic acid) homopolymer with water.

4,335,939

OPTICAL MODULATORS AND APPARATUS INCLUDING SUCH MODULATORS

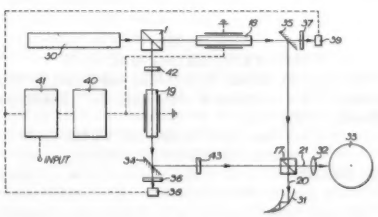
John E. Stovell; John Aughton, and Alberto Yi, all of London, England, assignors to Crosfield Electronics Limited, London, England

Filed Apr. 14, 1980, Ser. No. 139,627

Claims priority, application United Kingdom, Apr. 9, 1979, 7912420

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—385 **18 Claims**



1. A laser engraving apparatus for engraving printing cylinders comprising, a laser source, an optical modulator having a beam splitter for resolving a light beam from said source incident upon it into two plane polarised components said two plane polarised components having mutually perpendicular polarisation states, electro-optic cell means arranged to receive both of said plane polarised components, said electro-optic cell means in use, changing the state of polarisation of both of said plane polarised components to a corresponding extent, and analyser means arranged to receive both of said components leaving said electro-optic cell means, whereby the intensity of light output from said analyser means is a function of said change in said state of polarisation generated in both components during their passage through said electro-optic cell means, wherein said optical modulator includes two partially transmitting mirrors, one of said partially transmitting mirrors being located in the path of each of said components down-

stream from said beam splitter; said apparatus also including control means to supply an electric signal to said electro-optic means, and a dichoric polariser and a photodetector located to receive the part of each of said components transmitted by said partially transmitting mirrors, the output of said photodetectors providing a feedback signal to said control means to control said electric signal applied to said electro-optic means.

4,335,940

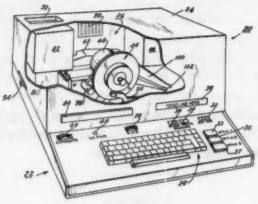
PHOTOCOMPOSING MACHINE

Grant T. Morgan, North Andover, Mass., assignor to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

Division of Ser. No. 92,465, Nov. 8, 1979. This application Oct. 27, 1980, Ser. No. 201,342

Int. Cl.³ G03B *15/24, 23/00, 17/06*

U.S. Cl. 354—8 **9 Claims**



5. In or for a photocomposing device, means for representing the total of the widths of character composed in a line of characters, size changing means for changing the size attributed to characters being composed, and means, responsive, to the operation of said size changing means to change to a new size, for re-calculating and displaying the total of the widths of the characters already set in the line as if the line originally had been set using said new size.

4,335,941

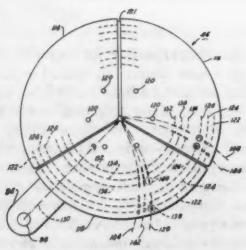
PHOTOCOMPOSING MACHINE

Louis M. Moyroud, Delray Beach, Fla., and Grant T. Morgan, Bayshore, N.Y., assignors to Autologic, S.A., Bussigny-pres-Lausanne, Switzerland

Filed Nov. 8, 1979, Ser. No. 92,465

Int. Cl.³ G03B *15/24, 17/06*

U.S. Cl. 354—15 **9 Claims**



1. A rotary character matrix bearing a plurality of concentric arcuate rows of characters and at least one arcuate row of timing slits, there being a slit adjacent and aligned with each character along the circumference of an alignment circle having a center offset from the rotational axis of said matrix.

4,335,942

CAMERA PROVIDED WITH AUTOMATIC FOCUS DETECTOR

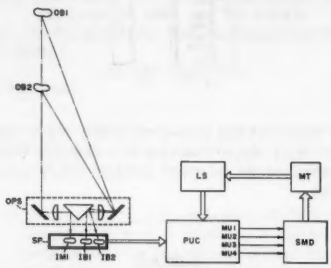
Tokuichi Tsunekawa, Yokohama, and Takashi Amikura, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,262

Claims priority, application Japan, Oct. 26, 1979, 54-139549; Oct. 29, 1979, 54-140045

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—25 **11 Claims**



1. A camera provided with an automatic focus detector, comprising:

a focusing state detecting circuit for discriminating the state of focus of an object image on a predetermined focal plane of a photographing lens from among at least three different states including forward-focus, in-focus and rearward-focus and for producing one of at least three different electrical signals corresponding to said at least three different focusing states, respectively, as an output signal;

photographing lens driving control means for moving the photographing lens along the photographing optical axis in accordance with the output signal from said focusing state detecting circuit and controlling the movement of the photographing lens in such manner that the focusing state on the focal plane can be brought into the in-focus state; and

a time discriminating circuit for discriminating whether or not the output signal from said focusing state detecting circuit is issued continuously for a time longer than a predetermined time and, when continuously issued for the predetermined time allowing said photographing lens driving control means to drive the photographing lens, wherein said time discriminating circuit comprises integration circuit means which starts integrating from the time when the state of the output from said focusing state detecting circuit changes; switching circuit means which operates when the integrated output from said integration circuit means exceeds a predetermined level or lowers below said level; and resetting means for resetting said integration circuit when the next change in the state of the output from said detecting circuit occurs.

4,335,943

COLOR COMPENSATING DEVICE FOR A CAMERA

Saburo Numata, 3-4948-501, Minamiurawa, Urawa-shi, Saitama-ken, Japan

Continuation-in-part of Ser. No. 96,059, Nov. 29, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,437

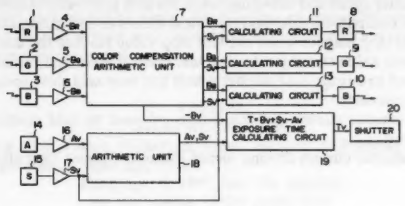
Claims priority, application Japan, Nov. 22, 1978, 53-144500

Int. Cl.³ G03B *7/081*

U.S. Cl. 354—60 R **6 Claims**

1. A color compensating device for a camera comprising measuring means for measuring blue, green and red light components of the light from a subject to be photographed, a plurality of light sources of different colors provided within the camera, a color compensation arithmetic unit for calculating the necessary amount of light of different colors of said light sources to which the film in the camera should be exposed

for color compensation based on the outputs of said measuring means, and means for turning on said light sources selectively



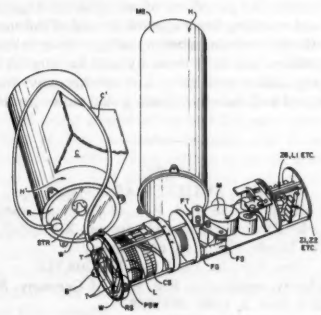
according to the output of said arithmetic unit to expose the film to colors of light as necessary for color compensation.

4,335,944

APPARATUS FOR UNDERWATER IMAGE-RECORDING AS BY SONAR-TRIGGERED ELAPSED TIME STROBE PHOTOGRAPHY AND THE LIKE

Duane Marshall, 9 Hadley Rd., Lexington, Mass. 02173

Filed Jul. 23, 1980, Ser. No. 171,373
Int. Cl.[3] G03B *17/08, 17/36, 15/04, 9/52*
U.S. Cl. 354—64 **17 Claims**



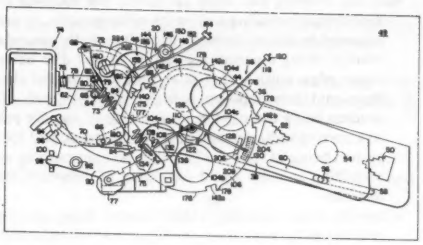
1. In a sonar-controlled image-recording apparatus having water-tight housing means containing the sonar and image-recording apparatus, an acoustic and light transparent window provided as a wall of the housing; lens means connected with the image-recording apparatus mounted within the housing in proximity to said window; transducer means connected with the sonar apparatus and disposed to transmit and receive sound waves at said window, being mounted outside a field of view of the lens means and shaped to have a sonar beam axis substantially co-directional with an axis of the lens means; and control means operable, when the transducer means receives echoed sound waves from an underwater object in front of the said window and of predetermined characteristics and within predetermined range limits of said window within which image-recording underwater is useful, for activating the image-recording apparatus to enable recording of the underwater object.

4,335,945

CAMERA WITH STRUCTURE FOR ADJUSTING LENS DISC VELOCITY AND CALIBRATION METHOD

Bruce K. Johnson, Andover, and Kenneth J. Launie, Stoneham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1981, Ser. No. 222,013
Int. Cl.[3] G03B *13/18, 9/08*
U.S. Cl. 354—197 **6 Claims**



1. A camera having means for defining a film plane, said camera comprising:

a plurality of discrete lens elements each having a different focal length;

a disc for holding said plurality of lens elements in circumferentially spaced apart relation with respect to each other for rotation about a center axis, rotation of said disc from an initial position operating to sequentially move each of said lens elements into position to focus an image at the camera film plane of a photographic subject located within a different corresponding camera-to-subject distance range;

a blade mechanism; means for mounting said blade mechanism for displacement between one arrangement in which said blade mechanism blocks transmission of scene light to the film plane and another arrangement in which said blade mechanism unblocks transmission of scene light to the film plane;

actuable drive means for displacing said blade mechanism between its said one and another arrangements to define an exposure interval;

a torsion spring having a first arm configured to be fixed during operation and an acceleration arm angularly displaceable relative to said first arm to vary the amount of energy stored in said spring as a function of the angular displacement therebetween, said acceleration arm also being configured to be releasably held at cocked energy storing initial position fixed in its relation to said disc and, upon release, to move to a terminal position, said acceleration arm operating during such movement from said initial to said terminal position to accelerate said disc with a force determined by the amount of energy stored in said spring when said acceleration arm is in said cocked initial position for effecting rotation of said disc at a rotational velocity proportional to said force to sequentially move each of said lens elements into focusing position;

means for releasably latching said blade mechanism in its said scene light blocking arrangement and also for releasably holding said acceleration arm in said cocked initial position, said blade latching and acceleration arm holding means being movable from a blade mechanism latching position to a blade mechanism unlatching position to enable said drive means to displace said blade mechanism from said blocking to said unblocking arrangement, said movement from said latching to said unlatching position simultaneously operating to release said acceleration arm for movement from said initial cocked position to said terminal position to effect rotation of said lens holding means;

means for releasably holding said first arm at a selected one of a plurality of different fixed positions relative to said acceleration arm located at its said cocked position, each of said different fixed positions providing a corresponding different angular displacement between said cocked acceleration arm and said first arm to thereby vary the energy stored in said spring when said acceleration arm is at said cocked position for the purpose of adjusting the rotational velocity achieved by said disc in response to said acceleration force applied thereto by said acceleration arm;

said disc forming part of an automatic lens focusing system and further including a plurality of tang receiving notches disposed in predetermined circumferentially spaced apart relation along a peripheral section of said disc having an outer edge portion that is at a constant radial distance from said axis between adjacent notches, each of said notches being disposed in predetermined angular relation to a corresponding one of said lens elements, said focusing system being of the type including a sonic ranging system providing an echo signal indication of camera-to-subject distance;

a lens disc pawl, including a tang thereon, being mounted for movement between a retracted position wherein said tang is disengaged from said disc, an intermediate position wherein said tang engages said outer edge portion between adjacent notches and rides thereon in response to disc rotation and a terminal position wherein said tang is automatically received in the next approaching notch following movement of said pawl to said intermediate position to stop disc rotation and locate a corresponding one of said lens elements at said focusing position;

means correlated to a predetermined rotational velocity of said disc and responsive to provision of said echo signal indication for effecting movement of said lens pawl from said retracted to said intermediate position to locate said tang in engagement with said outer edge portion ahead of the appropriate one of said notches;

a cover located in visually blocking relation to said peripheral section of said disc and said pawl; and

means for defining an aperture in said cover allowing observation of the motion of said pawl to determine the length of time said tang rides on said outer edge portion before it is received in said approaching notch, said ride-time being proportional to and providing an indication of disc velocity to determine if adjustment of said torsion spring is necessary to vary disc velocity.

4,335,946

CONTROLLED DISENGAGING DEVICE IN AUTOMATIC EXPOSURE CAMERA OF THE LENS STOP VALUE CONTROL TYPE

Hiroshi Kurei, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1978, Ser. No. 874,674

Claims priority, application Japan, Feb. 25, 1977, 52-22073[U]

Int. Cl.³ G03B *9/02, 9/32*

U.S. Cl. 354—228 **1 Claim**

1. An automatic exposure camera of the lens stop value control type, comprising:

a lens stop release member actuated by a lens stopping operation;

a slow speed mechanism which operates to increase the displacement of said lens stop release member, said slow speed mechanism having a ratchet wheel, a control lever and ratchet pawl biased for engagement with said ratchet wheel;

a lens stop magnet which when energized holds said control lever and ratchet pawl out of engagement with said ratchet wheel;

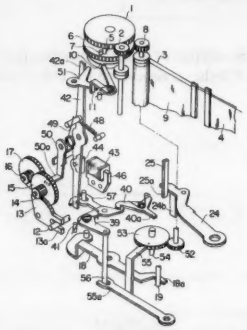
a set lever pivotable between first and second positions and which, when in said first position holds said control lever in engagement with said lens stop magnet;

a locking lever normally holding said set lever in its first position and releasing said set lever in response to the release operation of the camera;

electrical means for computing a lens stop value for a preset shutter speed and detecting when the lens stop value reaches the computed value, said electrical means deenergizing said lens stop magnet when the lens stop value reaches the computed value thereby releasing said control lever and ratchet pawl to engage said ratchet wheel and stop said slow speed mechanism;

front shutter curtain driving means released by said control lever;

rear shutter curtain driving means released a preset time after



the release of said front shutter curtain driving means, said front and rear shutter curtain driving means respectively causing the front and rear shutter curtains to run in front of a film plane to thereby expose a photographic film;

a gear rotated by said rear curtain driving means;

a restoring lever coupled to said set lever; and

a pin provided on the periphery of said gear for engaging and rotating said restoring lever toward the end of the running of said rear shutter curtain, whereby said set lever is rotated to its first position and held there by said locking lever, thus disengaging said control lever and ratchet pawl from said ratchet wheel and thereby releasing said slow speed mechanism.

4,335,947

CAMERA SHUTTER ASSEMBLY

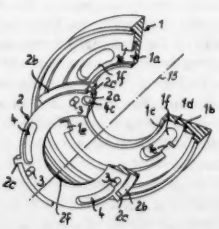
Karl-Heinz Lange, Bünde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Geräte und Kunststoff GmbH & Co., KG, Bünde, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,742

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946876; Nov. 3, 1980, 3041208

Int. Cl.³ G03B *9/08, 9/02*

U.S. Cl. 354—230 **19 Claims**



1. In a camera leaf shutter assembly having a central axis in common with the objective axis including a stationary carrier ring, at least one activation ring rotatably mounted on the

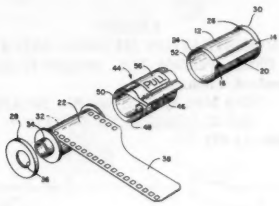
carrier ring and shutter blades oscillatably mounted on the activation ring, the improvement which comprises forming the carrier ring with an annular groove having a radial inner wall and a radial outer wall for receiving the activation ring, the outer wall including means for securing an activation ring in said annular groove and the carrier ring and activation ring of a synthetic material.

4,335,948

FILM RETRIEVER

Vincent L. Cocco, Wakefield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 6, 1981, Ser. No. 251,142
Int. Cl.³ G03B *17/26;* B25B *9/00*
U.S. Cl. 354—275 **8 Claims**



1. A photographic film assemblage comprising:

a film cassette including means defining an exit through which a strip of film may pass to the exterior of said film cassette;

means for supporting a strip of film, said supporting means being rotatably supported within said film cassette;

a strip of film coiled about said supporting means, said film including a leading end which is adapted to extend to the exterior of said film cassette via said exit and a trailing end secured to said supporting means; and

means for retrieving said leading end of said film from within said film cassette, said retrieving means including a strip of flexible sheet material having first and second opposite ends and an intermediate section therebetween, said sheet material being wound about said film such that said intermediate section is located between and in engagement with an outwardly facing surface of the outermost convolution of said film and an interior surface of said film cassette with said first and second ends thereof extending through said exit to the exterior of said film cassette, whereby movement of said leading end of said film from within said film cassette may be accomplished by pulling said first end of said sheet material in a manner so as to withdraw said intermediate section of said sheet material from film cassette.

4,335,949

REPRODUCTION MACHINE WITH RECIRCULATING DOCUMENT HANDLER DIAGNOSTICS

William P. Kukucka, Webster, and John W. Daughton, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1980, Ser. No. 115,975
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **5 Claims**

1. In a reproduction machine having a recirculating document handler and a display, a plurality of displayable events being provided to monitor the recirculating document handler operation, the method of operating the recirculating document handler comprising the steps of:

placing the reproduction machine in an evaluation condition for displaying the recirculating document handler events while inhibiting the production of copies,

selecting a particular event to be displayed,

displaying the particular event selected and a related indicator manifesting a particular recirculating document handler condition, and

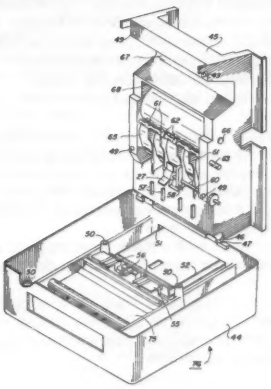
selectively displaying other of said displayable events and related conditions manifesting recirculating document handler conditions, the reproduction machine remaining in the recirculating document handler operation evaluation condition.

4,335,950

FRAME ASSEMBLY WITH UPPER AND LOWER FRAME MEMBERS FOR AUTOMATIC REPRODUCING APPARATUS

Edward J. Gunzelmann, Fairport; Raghulinga R. Thettu, Webster, and Larry M. Wood, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 24, 1980, Ser. No. 219,691
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **15 Claims**



1. An automatic reproducing apparatus comprising a frame assembly for mounting thereto individual reproducing apparatus components, said frame assembly including a lower frame member of molded plastic material and an upper frame member of molded plastic material, said lower frame member having sheet bottom guiding elements integrally molded therein and said upper frame member having sheet top guiding elements integrally molded therein said upper and lower frame members being positioned relative to each other to provide at least a portion of a copy sheet transport path whereby a sheet of copy paper being processed through the reproducing apparatus is guided along its path by said sheet top and bottom guiding elements.

4,335,951

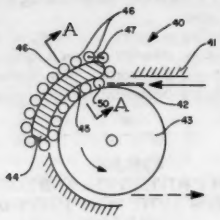
FUSING APPARATUS

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 23, 1980, Ser. No. 161,964
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **6 Claims**

1. A pressure fusing apparatus for use in a xerographic copying machine for fixing a developed toner image to a copy sheet comprising in combination a first roller adapted to be rotatably mounted and driven within said machine; an arcuately shaped support member, the inner surface of which is spaced from and lies substantially parallel to a portion of the outer surface of said first roller; spring means for biasing said arcuately shaped support member toward said first roller; and a plurality of interconnected second rollers having a smaller outside diame-

ter than said first roller mounted for rolling contact about said arcuately shaped support member, said second rollers and said



first roller adapted to form a series of nips through which copy sheets being fused pass.

4,335,952

COPY QUALITY DIAGNOSTIC PROCEDURE

Douglas J. Conly; David D. Larson, both of Boulder, Colo., and Stanley T. Riddle, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,093
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 R 5 Claims

1. In a copier of the electrophotostatic type, having a photoconductor means for receiving during an imaging cycle optical images from an expose lamp means and a plurality of variable edge erase lamp means for providing selectively erasable edges, a method for testing proper operation of subsystems of said copier comprising the steps of:

operating said copier with a blank input image to be copied;

turning off said expose lamp after said imaging cycle begins; and

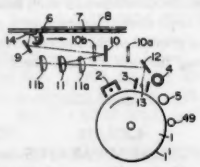
developing a resulting copy sheet in a normal manner, whereby said copy sheet should show a blank area gradually and evenly fading into black when said expose lamp means is functioning properly.

4,335,953

VARIABLE MAGNIFICATION COPYING APPARATUS

Hiroaki Tsuchiya, Tokyo, and Ikuo Soma, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,446
Claims priority, application Japan, Dec. 12, 1979, 54/161185
Int. Cl.[3] G03G *15/28, 15/00*
U.S. Cl. 355—14 CH 28 Claims



1. A variable magnification copying apparatus comprising:

an electrophotographic photosensitive medium;

charge supply means for supplying charge to said photosensitive medium;

lens means for forming the image of an original to be copied on said photosensitive medium, the image of the original being projected upon said photosensitive medium through a first light path portion which is the forward light path of said lens means and a second light path portion which is the rearward light path of said lens means;

magnification changing means for changing the ratio of the length of said first light path portion to the length of said second light path portion correspondingly to a selected magnification;

illuminating means for illuminating said photosensitive medium with a reference light through said lens means after the ratio of the length of said first light path portion to the length of said second light path portion has been changed;

detector means for detecting the potential of said photosensitive medium; and

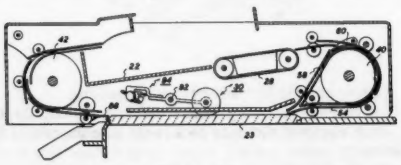
control means for controlling the output of said charge supply means by using the output signal of said detector means corresponding to the potential of the area of said photosensitive medium illuminated by said reference light.

4,335,954

COPIER REGISTRATION METHOD AND APPARATUS

Russell L. Phelps, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 4, 1981, Ser. No. 240,428
Int. Cl.[3] G03G *15/00;* B65H *9/10*
U.S. Cl. 355—14 SH 13 Claims



1. Apparatus for repetitively registering successive document sheets above a copier platen comprising:

(a) drive means for driving said sheets across said platen;

(b) means for disengaging said drive means to allow two dimensional registration of a particular sheet with respect to said platen;

(c) means for driving said sheet into registration along two orthogonal registration positions; and

(d) means for shifting said sheet away from one of said registration positions before said drive means is re-engaged to drive said sheet off said platen.

10. A process for two dimensional registering a series of successive document originals above a transparent copier platen comprising the steps of:

(a) driving a document onto said platen with a drive roller;

(b) disengaging said drive roller from said document;

(c) driving said document into corner registration on said platen;

(d) contacting said corner registered document with said drive roller;

(e) shifting said drive roller along a direction parallel to an axis of drive roller rotation to re-position said document in relation to said platen;

(f) driving said document from said platen; and

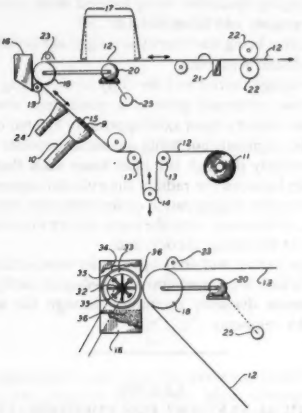
(g) repeating steps a-f for successive documents.

13. In a copier, a process comprising the steps of moving a document original along an input path to a platen for copying, stopping said document at an initial position on said platen, repositioning said document on said platen to a registration position so that an image of said original will be properly aligned on said copier photoreceptor, clamping said original to said platen to insure said document is within a copier imaging depth of field, transmitting said image to said photoreceptor, jogging said document away from said registration position, and removing said document from said document from said platen along an exit path.

4,335,955
ELECTROSTATIC DISPLAY APPARATUS

Ira Lopata, New York, N.Y., assignor to Ragen Precision Industries, Inc., North Arlington, N.J.

Continuation-in-part of Ser. No. 899,561, Apr. 24, 1978. This application Jan. 30, 1979, Ser. No. 7,699
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—16 1 Claim



1. An apparatus for forming, toning, and displaying the unfused visible electrostatic image on an electrostatic strip, and alternatively and selectively for erasing the electrostatic strip or for fusing the visible electrostatic image to make a permanent copy thereof includes,

a. source means for said electrostatic strip,

b. a generally horizontal planar surface means having a viewing station thereon disposed in spaced relation to the source means, said planar surface means having an inlet end and an outlet end for the electrostatic strip.

c. means connected to the source means to normally feed the electrostatic strip in a forward direction through a predetermined course to and across the viewing station on said planar surface means to dispose the electrostatic strip for inspection at the viewing station and said feed means including, means for reversing the direction of movement of the electrostatic strip,

d. means between the source means and the inlet side of the planar surface means and disposed relative the electrostatic strip to form a latent electrostatic image on the electrostatic strip,

e. magnetic toning means between the latent electrostatic image forming means and the inlet side of the planar surface means to make the latent electrostatic image visible for inspection when the electrostatic strip is moved forward to the viewing station includes,

i. a non-magnetic, stationary cylinder,

ii. a plastic collar on the cylinder,

iii. a revolvable shaft disposed in the cylinder,

iv. at least one magnet mounted longitudinally on the shaft,

v. a bin of magnetic particles adjacent to the cylinder within the influence of the magnet in the cylinder, and

vi. the plastic collar closely spaced from the electrostatic strip as it is fed whereby the toner is attracted to the electrostatic image,

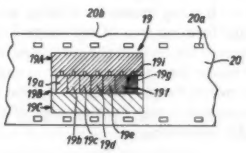
f. means adjacent the outlet end of the planar surface selectively operable only on forward movement of the electrostatic strip to fuse the desired visible electrostatic image to form a permanent copy thereof, and

g. a normally non-operative means disposed adjacent the inlet end of the planar surface means selectively operable when the reversing means is actuated to move the electrostatic strip in a reverse direction to neutralize and remove toner from the unfused visible electrostatic image to permit reuse of the electrostatic strip.

4,335,956
METHOD AND APPARATUS FOR ADJUSTING ASSOCIATED PHOTOGRAPHIC COPYING AND DEVELOPING MACHINES

Günter Findeis, Sauerlach; Berthold Fergg, Taufkirchen; Viktor Osegowitsch, Taufkirchen am Wald; Hans P. Huber, Munich, and Heinz Meckl, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,803
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911567
Int. Cl.[3] G03B *27/32, 27/52*
U.S. Cl. 355—27 32 Claims



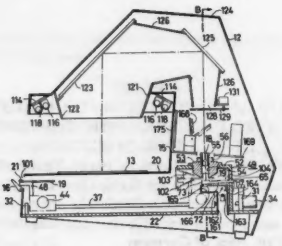
1. A method of testing the condition of a copying machine and an associated developing machine for color prints with resort to a calibrating sample, comprising the steps of exposing the image of the calibrating sample onto a first portion of a given photosensitive material in the copying machine; exposing a test print onto a second portion of such photosensitive material under predetermined circumstances; developing the thus exposed portions of photosensitive material in the developing machine; monitoring a characteristic of each of the thus developed portions of photosensitive material; comparing the monitored characteristics with predetermined reference characteristics; and evaluating the condition of at least one of said machines as a function of the outcome of said comparing step.

14. An apparatus for testing the conditions of copying machines and associated developing machines, comprising a copying machine having means for exposing the image of a calibrating sample onto a first portion of photosensitive material and for making a test exposure on a second portion of said photosensitive material under predetermined circumstances; a developing machine arranged to receive said photosensitive material from said copying machine and to develop said first and second portions thereof; and means for sensing a characteristic of each of said first and second portions of said photosensitive material after development, comparing the sensed characteristics with predetermined reference characteristics and evaluating the condition of at least one of said copying machine and developing machine based on the comparison of the sensed and predetermined reference characteristics.

4,335,957
IMAGE FORMING METHOD AND APPARATUS THEREFOR

Kohei Nonaka, Yokohama; Masahiro Koyama, Kawasaki; Makoto Gonmori, Tokyo; Takeo Kimura, and Tetsuo Shiga, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 63,306, Aug. 2, 1979, Pat. No. 4,287,295.
This application May 22, 1981, Ser. No. 266,240
Claims priority, application Japan, Aug. 11, 1978, 53-98524; Jun. 22, 1979, 54-78688
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—30 **35 Claims**



1. Image forming apparatus for forming an image using a heat-developable image forming sheet that is normally non-photosensitive but can be rendered photosensitive by preheating prior to exposure and exposed to a light image to form therein a latent image and then heat-developed to obtain a visible image, comprising

one or two heating means for heating and heat-developing an image forming area of the image forming sheet;

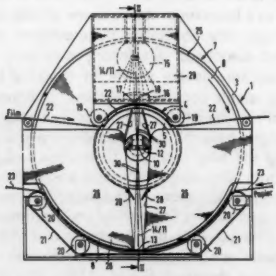
cooling means for cooling the preheated image forming area of the image forming sheet prior to exposure; and

exposure means for projecting an optical image of a subject to the cooled image forming area of the image forming sheet for exposure.

4,335,958
METHOD OF COPYING PICTURES FROM A TRANSPARENT CARRIER TO A SENSITIVE PAPER AND DEVICE FOR ITS EXECUTION

Hermann Seitz, Dietlikon, Switzerland, assignor to Createchnic Patent AG, Dietlikon, Switzerland

Filed Nov. 10, 1980, Ser. No. 205,753
Claims priority, application Switzerland, Dec. 14, 1979, 11074/79
Int. Cl.³ G03B *27/48*
U.S. Cl. 355—48 **8 Claims**



1. A method of copying images from a transparent image carrier on to a light-sensitive copy carrier, comprising the steps of:

projecting a light beam emanating from a light source through the transparent image carrier and through an objective onto the light-sensitive copy carrier located at a focal point of the objective;

both the part of the image carrier and also the part of the copy carrier which are impinged by the light beam during the copying operation being located upon co-axial cylinder segments and being moved;

the objective being stationarily arranged at a common axis of the cylinder segments;

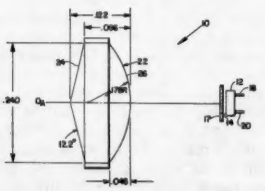
both the image carrier and the copy carrier being rotated in the same rotational sense at a continuous and constant angular velocity upon axial oppositely located ones of the cylinder segments but being guided in opposite directions continuously through the light beam such that the relationship between the radii of the cylinder segments corresponds to the magnification or size reduction ratio, respectively, of the copy upon the copy carrier in relation to the image at the image carrier; and

said image carrier and said copy carrier intersecting the light beam which is covered into a strip-shaped configuration at a common diameter extending through the axis of the cylinder segments.

4,335,959
OPTICAL ELEMENT FOR PHOTOGRAPHIC RADIOMETER

Monis J. Manning, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1979, Ser. No. 99,599
Int. Cl.³ G01J *1/42*; G02B *5/22*
U.S. Cl. 356—218 **7 Claims**



1. A photoelectric radiometer for providing an output signal that can be used directly to predict an exposure value for a photographic scene or alternatively as an input signal to a camera exposure control system of the type which operates in an ambient exposure mode in which available light is the source for illuminating a scene or an artificial light mode in which an artificial light source serves as the scene illumination source and is effective in both exposure modes to automatically regulate the amount of exposure to which a film is subjected, said radiometer comprising:

photodetector means, having a predetermined surface and given spectral sensitivity, for providing an output signal having an electrical characteristic that varies in accordance with the intensity of radiant power incident on said surfaces; and

an optical element comprising a positive lens of predetermined focal length molded of an optical plastic comprising polycarbonate or polystyrene for collecting radiant energy to direct said collected radiant energy onto the photoelectric cell surface and including at least one metal-organic infrared absorbing dye at least partially dissolved homogeneously throughout and commonly molded with said optical plastic for selectively attenuating the spectral content of said collected radiation.

4,335,960
APPARATUS FOR DETECTING THE PRESENCE OF SURFACE IRREGULARITIES IN ARTICLES MADE OF TRANSPARENT MATERIAL

Richard I. Ashcroft, Harpenden, and David Kaktovics, Gainsborough, both of England, assignors to United Glass Limited, Middlesex, England

Filed May 20, 1980, Ser. No. 151,619

Claims priority, application United Kingdom, May 21, 1979, 7917540

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—240 **6 Claims**

1. An apparatus for detecting the presence of surface irregularities in the bases of transparent glass containers, which comprises an opaque object, viewing means adapted to be focussed on said object, a light source means positioned behind said object relative to said viewing means whereby light is refracted to said viewing means in the presence of an irregularity in a container under inspection, and means for transporting containers to be inspected between said viewing means and said opaque object, said opaque object being defined by optical slit means having an opaque line disposed longitudinally of the slit means and disposed between the sides of the slit means and said transporting means comprising means for transporting transparent containers across said slit with the container bases adjacent said slit and for causing relative rotation of said containers and slit.

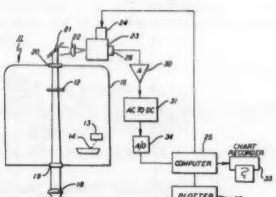
4,335,961
REFRACTIVE INDEX MEASUREMENT OF OPTICAL THIN-FILM

Tzeyang J. Chou, Liverpool, N.Y., and Oded Arnon, Givataim, Israel, assignors to Inficon Leybold-Heraeus, East Syracuse, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,428

Int. Cl.³ G01N *21/45*

U.S. Cl. 356—361 **9 Claims**



1. The method of determining the refractive index of an optical film over a wide spectral range including the steps of depositing a film of material upon a substrate so that the thickness of the film increases with time,

continually contacting the film with electromagnetic radiation as the film is being deposited upon the substrate so that the radiation is redirected by the contacted film,

periodically changing the wavelength of the energy contacting the film between a plurality of wavelength channels that are situated within a predetermined spectral region,

measuring the extreme limits of the radiation intensity redirected by the film for each channel,

determining from the measured limits the refractive index for each wavelength channel, and

plotting a curve of the determined indices to provide a profile of the film index over the entire predetermined range.

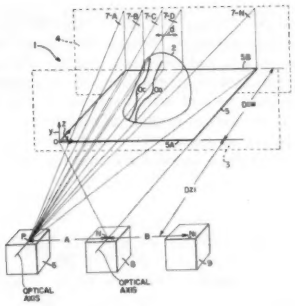
4,335,962
METHOD AND APPARATUS FOR DETERMINING SPATIAL INFORMATION

Paul Di Matteo, Huntington, and Joseph A. Ross, Fort Salonga, both of N.Y., assignors to Robotic Vision Systems, Inc., Melville, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,199

Int. Cl.³ G01B *11/24*

U.S. Cl. 356—376 **9 Claims**



1. Apparatus for determining spatial information relating to an object adapted to be situated within an object space having predefined front and rear extents comprising:

means for applying substantially planar diverging laterally spaced radiant energy beams to said object space, said beams having common point of intersection;

means for recording radiant energy in said object space, said recording means being positioned so that radiant energy from all points along each of said beams in said space and receivable thereby is uniquely defined, said recording means recording the confrontation of said radiant energy beams with a flat reference plane at said front extent and with said object in said object space;

and means for utilizing the records of said recording means including the records of said reference surface and said object to derive information for determining the spatial positions of points on said object.

4,335,963
OUTPUT COUPLING FOR CONCRETE MIXER TRANSMISSION

James J. Jameson, Coffeyville; Fred L. Mount, Independence, and Joe L. Fernandez, Coffeyville, all of Kans., assignors to Cooper Industries, Houston, Tex.

Filed Mar. 27, 1980, Ser. No. 134,719

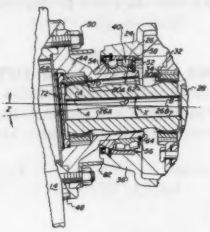
Int. Cl.³ B28C *5/42*

U.S. Cl. 366—63 **6 Claims**

1. In combination with a rotary drum, a torque transmission unit for rotating said drum, bearing means for journalling said drum on said transmission unit for relative rotation and axial deflection of said drum with respect to said transmission unit, and the improvement comprising:

a substantially rigid elongated rotary shaft for drivably coupling said drum to said transmission unit;

first coupling means on said drum for drivably coupling said drum to said shaft at one end of said shaft and permitting deflection of the axis of rotation of said drum with respect to the axis of rotation of said shaft, second coupling means rotatably mounted on said transmission unit and drivably coupling said transmission unit to the opposite end of said



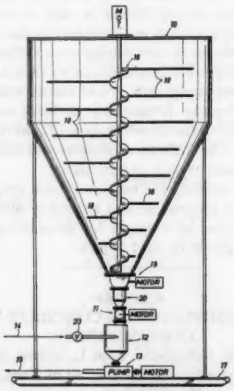
shaft and permitting deflection of said axis of rotation of said shaft with respect to the axis of rotation of said second coupling means, and said shaft extends through and is spaced from said bearing means whereby respective deflections between said axis of rotation of said shaft with respect to the axes of rotation of said drum and said second coupling means equal in total the axial deflection between said drum and said transmission unit.

4,335,964

INJECTION SYSTEM FOR SOLID FRICTION REDUCING POLYMERS

Bruce S. Drake, Midland, and Vitold R. Kruka, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 965,804, Dec. 4, 1978, Pat. No. 4,263,926.
This application Jan. 5, 1981, Ser. No. 224,851
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—114 **4 Claims**



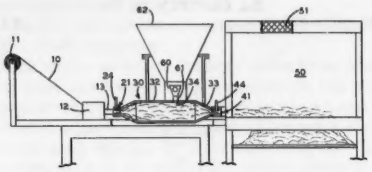
1. A method for maintaining polymer particles in readily recoverable, discrete, liquid-free form during storage comprising, providing a storage hopper having a cone bottom and an auger extending upwardly from the apex of the cone bottom; disposing particulate polymer within the hopper; rotating the auger to force contacting particulate polymer upwardly in the hopper; and vibrating the lowermost part of the cone bottom.

4,335,965

FIBER-RESIN BLENDING TECHNIQUE

Delmar A. Faverty, Alliance, and Robert E. Shuck, North Canton, both of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 922,608, Jul. 7, 1978, Pat. No. 4,260,265.
This application Dec. 16, 1980, Ser. No. 217,286
Int. Cl.³ B01F *13/02, 15/02*
U.S. Cl. 366—150 **5 Claims**



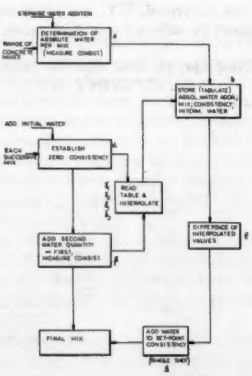
1. An apparatus for impregnating fluidized fibers with powdered resin comprising: a first flow accelerating device through which the fluidized fibers are conveyed, a mixing chamber mounted in fluid communication with said first flow accelerating device, means for decelerating and dispersing the fluidized fibers into said mixing chamber from the first flow accelerating device, a receptacle containing a supply of the powdered resin in communication with said mixing chamber, means for injecting a metered flow rate of said powdered resin into the mixing chamber, and a second flow accelerating device in fluid communication with said mixing chamber for withdrawing resin impregnated fibers from the mixing chamber.

4,335,966

METHOD OF PREPARING CONCRETE MIXTURES

Joachim Rapp, Weingarten, and Peter Bittmann, Gaggenau, both of Fed. Rep. of Germany, assignors to Elba-Werk Maschinen-Gesellschaft mbH & Co., Ettlingen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,202
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952124
Int. Cl.³ B28C *5/00, 7/04*
U.S. Cl. 366—2 **5 Claims**



1. A method of controlledly preparing a concrete mixture comprising the steps of:

(a) establishing a zero consistency for concrete mixes at a water content thereof in excess of the intrinsic water content of aggregates to be used in such mixes and adapted to be formed by the addition of water thereto

whereby the water content of a mix at said zero consistency is less than the water content of the mix at a plurality of set point consistencies;

(b) establishing the quantity of water required to bring a mix from said zero consistency to each of said set point consistencies; and

(c) for each subsequent mix,

(c_1) adding water thereto until as determined by consistency measurement, the consistency thereof reaches said zero consistency, and

(c_2) thereafter adding in a single shot the balance of the water required to bring each mix at zero consistency to a corresponding set point consistency.

4,335,967

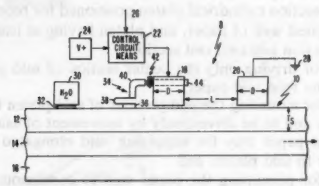
ELECTROLYTIC PRINTING APPARATUS INCLUDING PREHEATING PRESSURE PAD THEREFOR

Joseph P. Pawletko, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1981, Ser. No. 240,332

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—119 **8 Claims**



1. Preheating appratus for an electrolytic based printer having at least one write electrode for applying electrical pulses in a print zone to a recording medium used therein, transport means for moving the recording medium to and beneath the write electrode in the print zone, applicator means positioned to meter a liquid onto the surface of the according medium before it reaches the print zone and the write electrode, a source of electrical energy and control circuit means connected between the source and the write electrode for generating and forwarding pulses of appropriate amplitude and duration to the write electrode, said apparatus comprising;

(a) support arm means coupled to the write electrode for movement therewith;

(b) a pad having heating means incorporated therein for heating the bottom of said pad and the area of the recording medium it contacts prior to passage of the contacted area into the print zone; and

(c) biasing means connected to and between said support arm means and said pad for normally urging the bottom of said pad into contact with the recording medium and for forcing liquid deposited by the applicator on the surface thereof down into the recording medium as it passes beneath said pad.

4,335,968

TINT RESTORING DEVICE EMPLOYING A THERMAL PRINTING HEAD

Luc Regnault, Paris, France, assignor to Thomson-CSF, Paris, France

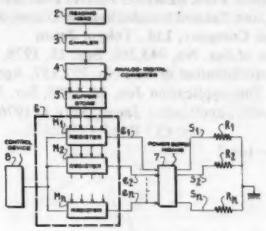
Filed Nov. 10, 1980, Ser. No. 205,566

Claims priority, application France, Nov. 9, 1979, 79 27711

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—120 **3 Claims**

1. A device for restoring p tints (where p is a positive integer) comprising: a thermal printing head with n heating resistors (where n is a positive integer); a reading head for scanning a document line by line and delivering an analog signal the variations in amplitude of which are representative of variations in tint on the document; a sampler for sampling said signal and delivering n signal samples for each line scanned; an analog-digital converter for converting said signal samples and delivering, in respect of each sample, a binary number having q bits (where q is a positive integer); means for storing the n binary numbers delivered by the converter during scanning of a line in the document; power supply means for applying a



voltage to each of the n resistors of the thermal printing head, said power supply means having n control inputs; and control means having q inputs for receiving the q bits forming each of the n binary numbers stored by said storage means and n outputs respectively coupled to said n control inputs of the power supply means whereby to deliver n control signals for controlling the resistor heating time.

4,335,969

PRINT HEAD

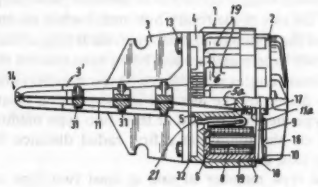
Hubert Ott, Ravensburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,798

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2927385

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **9 Claims**



1. A print head, comprising:

first means including a plurality of apertures for mounting a print needle of a plurality of such needles for longitudinal displacement so that the respective tips of the needles can be advanced for printing, respective other ends of the needles extending rearwardly from the first means;

a plurality of electromagnets, each including a coil and pole-defining means, the pole-defining means including for each magnet a particular pole having an end surface, the end surface of the pole-defining means of the plurality of electromagnets being annularly arranged;

a spring element having a plurality of radially outwardly extending spring arms, each spring arm having a bent-up edge of U-shaped elevation, the U having two legs and a cross-portion, the legs having their ends located above said particular, annularly arranged poles;

second means connected to the first means for centering the spring element; and

a plurality of generally flat, radially arranged armatures, each having a first, radially inner end engaging the other end of one of said needles, each armature having a second,

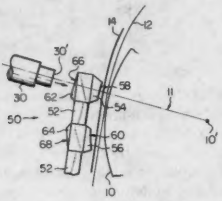
radially outer end with a bent-up lug that fits between the legs of the respective spring arm, the bent-up edge of the respective armature engaging the cross-portion of the U having the latter legs.

4,335,970

TYPE WHEEL FOR SERIAL PRINTING APPARATUS

Nobuo Iwata, and Takami Suzuki, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 943,266, Sep. 15, 1978, abandoned, which is a continuation of Ser. No. 792,157, Apr. 29, 1977, abandoned. This application Jun. 24, 1980, Ser. No. 162,563
Claims priority, application Japan, May 1, 1976, 51-49399
Int. Cl.³ B41J *1/26*
U.S. Cl. 400—144.2 **12 Claims**



1. A rotary type wheel for use in a serial printing apparatus of the type in which a hammer is linearly operable along a fixed longitudinal axis to bend selected resilient tongues of the rotary type wheel to impact against a generally cylindrical paper supporting platen with said longitudinal fixed axis intersecting the axis of said cylindrical platen, the combination wherein the rotary type wheel comprises:

a rotary hub means having a rotary axis, the rotary hub means being rotatable and shiftable to a printing position;

a plurality of resilient tongues extending from the rotary hub means and being disposed in a common plane perpendicular to the axis of the rotary hub means when not impacting against the platen by the hammer, each tongue carrying at least two type members and being bent toward the platen at different angles when the two type members are respectively driven by the hammer in the printing position;

a first type member of said at least two type members provided on the tongue at a first radial distance from the rotary axis; and

a second type member of said at least two type members provided on the tongue at a second radial distance from the rotary axis which is greater than the first radial distance from the rotary axis;

the first and second type members each having generally flat back faces which are adapted to be selectively contacted by the hammer to impact against the platen;

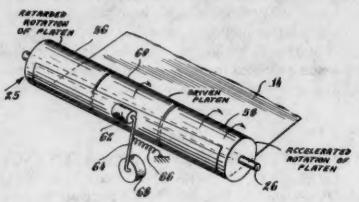
the first back faces of the first and second type members being disposed in different planes which intersects one another, neither of which is parallel to the common plane, such that the flat back faces of the first and second type members, upon impact of the respective type member against the platen as said type member is struck by said linearly operable hammer, are respectively disposed in first and second planes, either of which is substantially perpendicular to the fixed operable axis of the hammer, each tongue being bent toward the platen at first and second angles relative to the common plane when the first and second type members are respectively struck by the hammer in the printing position, the first angle being greater than the second angle, whereby the first and second type members are evenly impacted against the platen by the hammer.

4,335,971

RECORDER PAPER DRIVE

Charles F. deMey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,210
Int. Cl.³ B41J *11/04, 11/36, 15/04*
U.S. Cl. 400—619 **8 Claims**



1. Paper feeding apparatus comprising, in combination:

means for preventing skewing of paper as it is being fed, said means comprising;

a multi-section cylindrical platen positioned for receiving an elongated web of paper, said platen having at least a center section and two end sections,

means for driving only the center section of said platen to thereby feed said paper,

means for mounting the end sections of said platen to rotate freely and to be driven only by movement of said paper,

an input paper tray for supplying said elongated web of paper to said platen, and

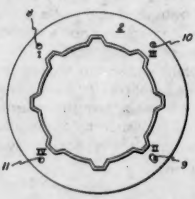
means for permitting the paper web to continuously align said tray as said web is being fed, said last named means comprising a pivotal mounting for said input paper tray adjacent to said platen to permit movement of said paper to continuously align the tray with respect to said platen.

4,335,972

APPARATUS HAVING POSITIONING AND MOUNTING MEANS FOR JOINING TWO PARTS AND METHOD OF USING SAME

George M. Rosenberry, Jr., Hendersonville, Tenn., assignor to General Electric Co., Schenectady, N.Y.

Filed May 19, 1980, Ser. No. 150,860
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—11 **17 Claims**



1. An apparatus comprising a first part, a second part juxtaposed with the first part and holding means for joining the first and second parts in fixed and aligned relationship, characterized by the improvement comprising:

(a) at least three threaded walls defining holes at spaced points in said second part,

(b) a plurality of threaded holding means each formed with a shaft adapted to be threaded into one of said holes in the second part, and each including a head portion larger in diameter than said shaft,

(c) at least three apertures through said first part at spaced points arranged to position each aperture in sufficiently close alignment, respectively, with each of said holes in the second part to enable each of said holding means to be

inserted respectively through said apertures and into the holes in the second part, said apertures having the following different relative sizes and configurations;

(i) the first aperture having at least one diameter that defines a predetermined close clearance fit with the shaft of one of said holding means positioned therein,

(ii) the second aperture having one diameter that defines a predetermined close clearance fit with the shaft of one of said holding means positioned therein, and having a second diameter about perpendicular to the first diameter, said second diameter defining a substantially looser clearance fit with the shaft of said holding means,

(iii) the third aperture having all of its diameters sized to define a loose clearance fit with the shaft of one of said holding means positioned therein.

4,335,973

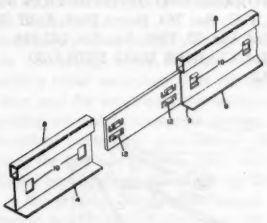
RUNNER SPLICER BAR

Martin J. Beck, Roxford, and George F. W. Boesel, Canton, both of Mass., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 20, 1981, Ser. No. 246,070

Int. Cl.³ F16B *7/04*

U.S. Cl. 403—300 **3 Claims**



1. A joint structure between two runner members wherein the two runner members are inverted T-shaped runner members with a vertical web, each runner member having identical ends wherein two apertures are positioned in each vertical web at the ends of each runner with the apertures spaced a slight distance apart and positioned in alignment along the vertical web, a splicer bar for fastening together the ends of two adjacent runners, said splicer bar having a pair of lugs means on each end of the splicer bar, said pair of lugs means being such that one pair of lugs means engages the two apertures on one end of one runner and the pair of lugs means on the other end of the splicer bar engages the two apertures on the adjacent abutting runner member to fasten together said runner members said lugs being resiliently mounted to snap into and out of engagement with said apertures.

4,335,974

MACHINE FOR COATING MILLED OR PEELED ROAD SURFACES

Reinhard Wirtgen, Hohner Strasse 2, 5461 Windhagen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,388

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856635

Int. Cl.³ E01C *23/12*

U.S. Cl. 404—92 **8 Claims**

1. In apparatus for coating stripped road surfaces with a new surface material constituted by a mixture of material previously stripped from the road and a new material, comprising:

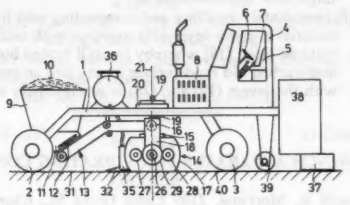
a vehicle including a chassis and a drive motor;

a supply container for the new material carried by said chassis at a front region thereof;

a plank-type finisher for applying the new surface material carried by said chassis at a rear region thereof; and

a mixing device carried by said chassis between said supply container and said plank-type finisher, the improvement comprising:

said mixing device comprises a housing in which a pair of rotatable mixers are arranged, said housing having an underside region which opens in opposed relationship to the road surface, said housing being provided with a first filling opening at an upper side region thereof adapted to receive material transported from said supply container and a second filling opening in the area of the underside



region thereof adapted to receive the material previously stripped from the road;

first transport means for transporting material at a selectively variable rate from said supply container into said mixing device housing through said first filling opening; and

shoving and conducting sheets for collecting material previously stripped from the road and guiding the same into said mixing device housing through said second filling opening.

4,335,975

METHOD AND APPARATUS FOR PLASTIFYING AND TEARING UP OF DAMAGED ROADSURFACES AND COVERS

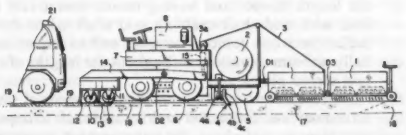
Walter Schoelkopf, Bruehlstrasse 38, 7024 Filderlinden, Fed. Rep. of Germany

Continuation of Ser. No. 942,758, Sep. 15, 1978, abandoned, which is a division of Ser. No. 745,122, Nov. 26, 1976, Pat. No. 4,129,398. This application May 5, 1980, Ser. No. 146,592

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554710; Oct. 25, 1976, 2648158

Int. Cl.³ E01C *7/06*

U.S. Cl. 404—77 **8 Claims**



1. A method for resurfacing an old blacktop road surface by means of first, second, and third separate, mobile units performing a respective first, second, and third group of steps, wherein said first group performed by said first, separate mobile unit comprises the steps of:

(a) providing, by means of a single heater, a single heat application to the old road surface for heating and plastifying the old road surface to a given depth (17),

(b) breaking up only a top portion (18) of the heated old road surface to produce a broken-up material layer having a thickness substantially less than said given depth (17) of heated old road surface,

(c) rearranging and distributing the broken-up material on the remaining still heated but otherwise undisturbed old road surface to produce a first profiled layer (19) of brok-

en-up material, wherein said second separate mobile unit performs the steps of:

(d) supplying fresh asphalt material into the third, separate mobile unit,

and wherein said third group performed by said third, separate mobile unit comprises the steps of:

(e) distributing fresh asphalt material on top of said profiled, broken-up layer (**19**) over the entire working width of the third unit while said road surface and the layer (**19**) of broken-up material are still sufficiently plastified from said single heat application, and

(f) immediately profiling and compacting said fresh asphalt material as a top layer (**25**) together with said broken-up material layer (**19**) whereby the still heated but otherwise undisturbed old road surface enters into an intimate bond with the layers (**19**) and (**25**) in a single heat application.

4,335,976

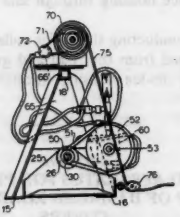
WINCH APPARATUS FOR VIBRATING CONCRETE SCREED

Donald R. Morrison, 2109 Camp Green St., Charlotte, N.C. 28208

Division of Ser. No. 29,654, Apr. 13, 1979, Pat. No. 4,253,778. This application Jan. 26, 1981, Ser. No. 228,226

Int. Cl.[3] **E01C** *19/38, 19/40*

U.S. Cl. 404—114 **2 Claims**



1. In a self-propelled concrete screed of the type having a base screed unit including:

(a) an elongated open frame structure comprising at least one frame unit and if more than one a group of interconnected separable frame units of similar construction each mounting a plurality of screed plates for engaging and leveling concrete as the screed is moved over the concrete;

(b) a vibrating element comprising a semi-flexible shaft rotatively supported in said frame structure and extending for the length thereof and having means operatively associated with said shaft enabling said shaft when driven to deflect between points of support and to impart substantially uniform vibrations throughout the lengths of each of said screed plates; and

(c) drive means mounted intermediate the ends of said base screed unit and connected to drive said shaft to impart said vibrations to said plates, the improvement comprising:

(d) an auxiliary combined winching and screed unit comprising:

(i) an elongated open frame structure of less length than said base screed unit and adapted to mate the open frame structure of said base screed unit with an equal plurality of mating screed plates for engaging and leveling concrete for the length of the auxiliary unit as an extension of the length engaged and leveled by said base screed unit;

(ii) means for detachably connecting adjacent end portions of said base screed unit and auxiliary open frame structures in fixed relationship including when desired an angular relationship;

(iii) a vibrating element comprising a semi-flexible shaft detachably connected to said base screed unit shaft at the juncture of said base screed unit and auxiliary open frame structures and rotatively supported in said auxiliary frame structure and extending for the length thereof and adapted to operate as an extension of said base screed unit shaft and to deflect and impart substantially uniform vibrations throughout the lengths of said auxiliary unit screed plates when said base screed unit shaft is rotated by said drive means;

(iv) power transmission means mounted on said auxiliary unit open frame structure connected to be driven off said auxiliary unit shaft to drive an output shaft and including means to control the speed thereof; and

(v) winching means mounted on said auxiliary unit frame structure including:

(aa) a cable drum connected to be driven by said output shaft;

(bb) a cable wound on said drum; and

(cc) cable guide means secured on said auxiliary unit frame structure enabling said cable to be withdrawn from said drum and anchored at some selected position ahead of the position of the screed preparatory to being wound on said drum by operation of said output shaft.

4,335,977

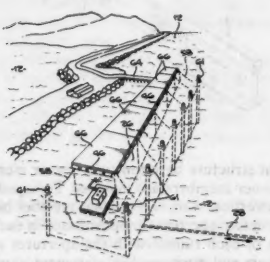
WATER STORAGE AND DISTRIBUTION SYSTEM

Vincent V. Ihli, P.O. Box 261, Buena Park, Calif. 90620

Filed Apr. 22, 1980, Ser. No. 142,694

Int. Cl.[3] **B63B** *35/00;* **E02B** *1/00*

U.S. Cl. 405—52 **10 Claims**



1. A multiple purpose system for the storage of runoff water, and for its utilization during arid seasons comprising:

means located at a rain-water runoff channel at a point near the ocean for collecting fresh water;

flexible storage reservoir means mounted in the ocean in a protected area for storing the collected fresh water;

conduit means for supplying fresh water to said reservoirs from said fresh water collecting means;

means for filtering and treating the collected water;

pumping station means for distributing the collected fresh water;

said reservoir means including a plurality of flexible walled tanks;

float means extending along the upper edges of said reservoirs partially in and partially extending above the ocean to support the edges of said reservoirs and preclude mixing of the fresh water with salt water from the ocean;

deck means supported on said float means for covering the top surface of each of said reservoirs for preventing the entrance of sea water, and for providing recreational commercial areas on said decks;

means for selectively filling said float means partially with water to stabilize them and control their buoyancy;

bridge means extending from said deck means to shore to provide access to said decks for recreational or commercial purposes; and

means located adjacent said container for protecting said reservoir and deck means against waves, said protecting

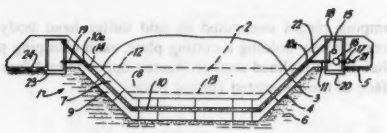
means including a two-stage system including an outer means for initially reducing the force of waves, and an inner means mounted between said outer means and said reservoir and deck means for further reducing the force of the waves.

4,335,978

INDUCED INTRAGRADIENT SYSTEM FOR SECURE LANDFILL

Robert D. Mutch, 17 E. Cedar Pl., Ramsey, N.J. 07446

Filed Apr. 7, 1981, Ser. No. 251,820
Int. Cl.[3] B09B *1/00*; B65G *5/00*
U.S. Cl. 405—129 16 Claims



1. Induced hydraulic intragradient system for secure landfill arrangement comprising

a low permeability inner primary liner for confining liquid leachate containing waste material landfill and a low permeability outer secondary liner for confining the primary liner and for separating the arrangement from the surrounding subsurface formation thereat,

an intermediate permeable piezometric pressure blanket separating the liners from each other, and

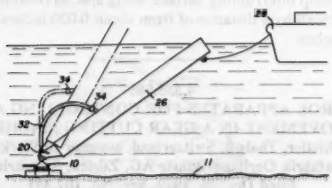
control liquid supply means for supplying sufficient control liquid to the pressure blanket to maintain selectively the piezometric head therein higher than the corresponding piezometric head of any leachate accumulation in the waste material confined within the inner liner, for induced hydraulic intragradient counterflow migration of control liquid from the pressure blanket inwardly through the inner liner, whereby to prevent flow migration of such leachate outwardly through the inner liner and in turn to and through the outer liner to the surrounding subsurface formation.

4,335,979

OFFSHORE TOWER WITH BALL AND SOCKET JOINT HAVING FLUID FLOW PASSAGE

Donald C. Stafford, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 29, 1980, Ser. No. 191,352
Int. Cl.[3] E02B *17/00*
U.S. Cl. 405—202 5 Claims



1. An offshore tower comprising:

a buoyant column;

a yoke at the lower end of the column;

a socket joined to the end of the yoke;

a base, adapted to be anchored to a sea floor, having a ball which fits in the socket for rotational joined movement relative to each other so that the column can rotate unrestrictedly in a sea level circle, including axial rotation of the column relative to the base;

a fluid delivery passageway, extending through the base and ball, communicating with a fluid swivel above the ball; and

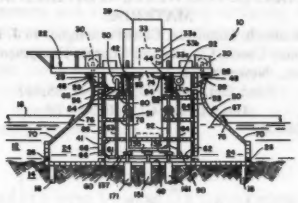
a fluid conduit means having a flexible portion, extending outwardly from the fluid swivel and into engagement with the column.

4,335,980

HULL HEATING SYSTEM FOR AN ARCTIC OFFSHORE PRODUCTION STRUCTURE

Coral L. DePriester, Moraga, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 28, 1980, Ser. No. 144,715
Int. Cl.[3] E02D *21/00*
U.S. Cl. 405—217 13 Claims



1. An offshore production structure for use in a body of water that contains ice masses, comprising:

a support portion positioned in a body of water, said support portion having a peripheral wall which converges upwardly and inwardly of the underwater bottom to provide a ramp-like surface to receive ice masses moving relative to and into contact with said support portion so as to elevate the ice above its natural level an amount to cause the ice to fail in flexure adjacent said structure;

means securing said support portion to the underwater bottom;

a production well being produced from said structure;

means for applying the heat from produced fluids from said well to the inner surface of said peripheral wall to maintain the temperature of the outer surface of said peripheral wall above the melting point of ice in contact with said structure to prevent the ice from freezing on and adhering to said peripheral wall so as to assist the ice in moving over said peripheral wall, wherein said means includes at least one chamber disposed within said support portion with said peripheral wall forming the outer wall of said chamber; and

means for circulating a heat transfer fluid through said chamber wherein said heat transfer fluid is heated by said produced fluids in an amount to maintain the outer surface of said peripheral wall above the melting point of the ice.

4,335,981

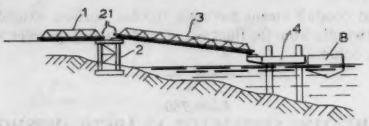
CARGO HANDLING EQUIPMENT

Seiji Akiyama, Yokohama; Mamoru Kurihara, Koganei, and Kazuhiko Ueki, Mitaka, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1979, Ser. No. 72,597
Claims priority, application Japan, Sep. 5, 1978, 53/121912[U]
Int. Cl.[3] E02B *3/20*
U.S. Cl. 405—221 2 Claims

1. Cargo handling equipment comprising: a stationary column offshore of the bank of a body of water, a stationary bridge extending from the shore to said stationary column and having a cargo transportion means thereon, a movable bridge

having one end connected to said stationary column for swinging movement in the horizontal and vertical directions and having a further cargo transportation means thereon and a



floating body detachably secured to the other end of said movable bridge and having legs which are vertically movable and can reach the bottom of the body of water.

4,335,982

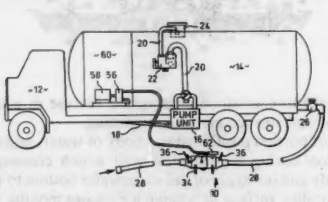
APPARATUS FOR WETTING DIVIDED SOLID MATERIAL

John Bratschitsch, Hamilton, Canada, assignor to J. B. Systems, Ltd., Stoney Creek, Canada and Georgia Equipment Manufacturing Inc., Newnan, Ga.

Filed Oct. 16, 1979, Ser. No. 85,447

Int. Cl.³ B65G *53/04, 53/26*

U.S. Cl. 406—48 **8 Claims**



1. Apparatus for wetting divided solid material entrained in an air stream, comprising:

a body having an inlet thereto and an outlet therefrom for the air stream, and providing in its interior a flow passage between the inlet and the outlet of greater cross-sectional area than the inlet;

deflector means mounted in the body adjacent the inlet to intercept the air stream and to distribute it over the greater cross-sectional area of the flow passage;

the said deflector means comprising a plurality of finger-like members extending radially inwards towards the axis of the flow passage; and

a plurality of water spray nozzle means each disposed to spray water into the flow passage to wet the solid material in the stream, the nozzle means being spaced from one another circumferentially around the flow passage and also longitudinally along the passage.

4,335,983

CUTTER HEAD FOR HIGH-SPEED MILLING

Günter Wermeister, Ratingen, and Bernhard Bellmann, Pfungstadt, both of Fed. Rep. of Germany, assignors to Sandvik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,568

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948544

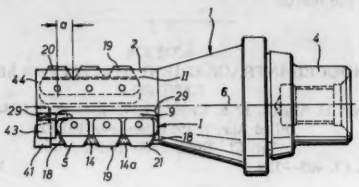
Int. Cl.³ B26D *1/12*

U.S. Cl. 407—41 **11 Claims**

1. A cutter head for high speed milling, comprising:

a cutter head body having chip spaces and recesses bounded by recess walls, the recess walls of a respective recess being directed radially outwardly toward one another and having a dovetailed cross section tapering toward the associated chip space;

cutting plates respectively arranged in said recesses and pressable by centrifugal force against associated recess walls, said cutting plates being respectively provided with a free surface; and



clamping pieces connected to said cutter head body for respectively holding a cutting plate, each clamping piece having an inclined surface located opposite said free surface of the associated cutting plate.

4,335,984

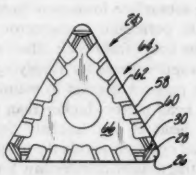
METALCUTTING INSERT FOR ROUGHING AND FINISHING

Raymond Zweekly, 4625 Sedgemoor, Royal Oak, Mich. 48073

Filed Nov. 5, 1980, Ser. No. 204,674

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **2 Claims**



1. A tool for cutting chip forming materials having a cutting corner defined by a chipbreaker surface and the intersection of two sidewalls wherein a plurality of chipbreaking depressions is formed in said chipbreaker surface closely proximate to said cutting corner, including; a first chipbreaking depression closely adjacent to and intersecting said cutting corner, having a concave rear chip interrupting surface substantially normal to the bisector plane devined by said sidewalls; and a pair of second chipbreaking depressions located adjacent to said first chipbreaking depression, next adjacent to said cutting corner, each having a conical chip interrupting surface substantially locally parallel to the cutting edge defined by the intersection of its respective sidewall and the chipbreaker surface, each said conical chip interrupting surface being spaced from its respective sidewall by a distance of from about 0.020 inches to about 0.040 inches.

4,335,985

CONTROL APPARATUS FOR CONTROLLING A FEED MOVEMENT IN A GEAR CUTTING MACHINE

Viktor Kistler, Thalwil, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Dec. 26, 1979, Ser. No. 107,331

Claims priority, application Switzerland, Jan. 24, 1980, 704/79

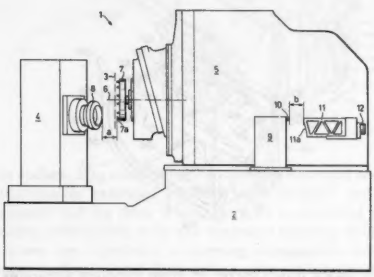
Int. Cl.³ B23F *3/00*

U.S. Cl. 409—3 **1 Claim**

1. A control apparatus for controlling a feed movement of a tool relative to a workpiece in a gear cutting machine working according to a continuous cutting process, comprising:

drive means for driving the tool and the workpiece;

a hydraulic selector spool valve containing a displaceable spool;
a cylinder;
a machine bed;
said hydraulic selector spool valve and said cylinder being mounted at said machine bed;
a feed piston arranged for to-and-fro movement within said cylinder;
a rolling cradle;
said feed piston being operatively connected to said rolling cradle;
means for displacing said spool;
said spool controlling the infeed of pressurized fluid medium to said feed piston;
said feed piston moving through a preparatory path and



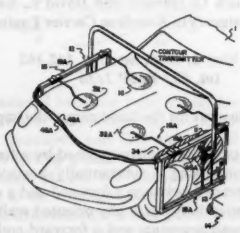
machining path, respectively, so that by means of the feed movement of the feed piston there can be accomplished movement through the preparatory path and machining path;
a control cam support displaceably arranged at the rolling cradle;
a control cam carried by said control cam support;
said control cam support regulating the preparatory path and said control cam governing said machining path of the feed piston;
switch means actuated by said spool for turning-off said drive means during the preparatory path and for turning-on said drive means during the machining path; and
pressure limiter means which is turned-on during the preparatory path and which is turned-off during the machining path.

4,335,986

VEHICLE BODY SURFACING AND DOLLY ASSEMBLY

Donald A. Fahrner, 203 Zephyr, Huntsville, Ala. 35801

Continuation-in-part of Ser. No. 837,007, Sep. 27, 1977, abandoned. This application Aug. 28, 1979, Ser. No. 70,515
Int. Cl.³ B23C *1/16*
U.S. Cl. 409—116 **16 Claims**



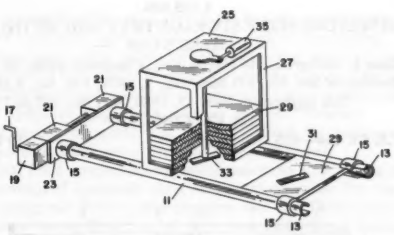
1. A vehicle body surfacing assembly for use with a source of power and upon a vehicle body comprising in combination a sending unit and surfacing unit, means to detachably secure said surfacing unit over the area of the associated vehicle body requiring repair and means to detachably secure said sending unit over means having contours similar to the contours of the portion of the vehicle body requiring repair, each of said units including a rectangular frame, a carriage mounted on each of said frames for movement relative thereto in one direction between the ends of the frame and in another direction between the sides of the frame, means operative to move said carriages connected to said source of power, a plurality of movable surfaces sensing element assemblies mounted in said carriage of said sending unit and contacting the means having contours similar to the contours of the portion of the vehicle body requiring repair, said assemblies each including a surface sensing element movable in a direction perpendicular to the plane of the frame of said sending unit, a plurality of surfacing components mounted in the carriage of said surfacing unit movable in a direction perpendicular to the plane of the frame of said surfacing unit, and contour transmitting drive cable means operatively extending between each of said surface sensing elements and a corresponding surfacing component whereby movement of each of said surface sensing elements, in a direction perpendicular to the plane of the frame, is reproduced in the corresponding surface component, each of said surfacing components having surface treatment means on the lower end thereof operatively engaging the surface of the vehicle body requiring repair.

4,335,987

APPARATUS FOR VERTICALLY STACKING FLAT WEIGHTS

Darryl E. Laxo, Novato, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1980, Ser. No. 144,707
Int. Cl.³ B65G *57/30, 59/06*
U.S. Cl. 414—27 **1 Claim**



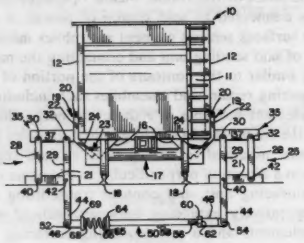
1. An apparatus for vertically stacking and unstacking a predetermined group in a series of groups of flat weights while said series of remaining groups are fixedly held comprising:
(a) a powered crank for raising or lowering each of said weights in said group for stacking or unstacking, the rotation direction of said crank determining whether stacking or unstacking is accomplished;
(b) a gear reducer operably connected to said crank;
(c) a pair of right-angle drives attached to a mounting bracket and operably connected to said gear reducer;
(d) a pair of spatially separated parallel-aligned c-tubes, each of said c-tubes connected by a shaft coupling to one of said right-angle drives; and
(e) means for retaining in vertical array said grouped series of said weights, said retaining means positioned adjacent said lifting means to operably receive said weights vertically lifted into the open bottom of said retaining means, said retaining means having a central post for retaining said series of groups of said flat weights in predetermined series order.

4,335,988

TRACKSIDE CAM CENTERING ARRANGEMENT

Dennis Marsden, Lake Stevens, Wash., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jun. 26, 1980, Ser. No. 163,239
Int. Cl.[3] B61D 7/030
U.S. Cl. 414—387 11 Claims



1. For a railway hopper car suited for movement on rails having longitudinally extending doors on opposite sides thereof hingedly mounted on the car for movement laterally outwardly from closed position to open position relative to a discharge opening, the improvement comprising:

a pair of trackside door closing mechanisms disposed in position to flank said hopper car as it moves therebetween,

means mounting said closing mechanisms comprising substantially parallel linkage and an equalizer assembly interconnecting said linkages,

said equalizer assembly extending beneath said rails and

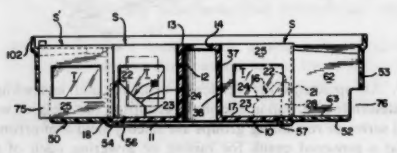
said means mounting said closing mechanisms operatively interconnecting said closing mechanisms for conjunctive preset lateral movements in response to parallelograming and/or swaying of the railway car.

4,335,989

MINIATURE SLIDE STORAGE TRAY AND METHOD OF USING SAME

Claes L. Hultgren, 334 Harris Ave., Clarendon Hills, Ill. 60514

Division of Ser. No. 931,606, Aug. 7, 1978, Pat. No. 4,253,789.
This application Nov. 17, 1980, Ser. No. 207,607
Int. Cl.[3] G03B 23/06
U.S. Cl. 414—405 19 Claims



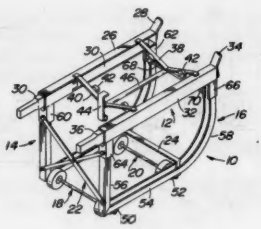
1. In combustion, a slide storage tray for storing a plurality of slides in a prearranged, closely compacted relation, and a slide transfer tray for receiving and holding said slides in prearranged positions so as to permit said slides to be transferred from said transfer tray into compartments in an associated slide projection tray, said storage tray comprising a plate-like base having partition means thereon defining a plurality of open-ended compartments for receiving and supporting a plurality of slides in segregated, annularly arranged, radially extending relation, said slide transfer tray comprising a plate-like base, a cooperating cylindrical wall and partition means defining a plurality of slide compartments with openings at one side for receiving slides transferred from the compartments of said slide storage tray, said slide transfer tray being movable into engaged relation with said slide storage tray, and alignment and indexing means carried by said slide transfer and storage trays and operable to maintain axial and radial alignment between respective compartments of said slide storage and transfer trays so that slides can be freely transferred between said compartments.

4,335,990

KNOCK DOWN BARREL HANDLING APPARATUS

Robert F. Apter, Wyncote; Carl Apter, Ambler, and Joseph Soliday, North Wales, all of Pa., assignors to R. A. Industries, Inc., Lansdale, Pa.

Filed Nov. 24, 1980, Ser. No. 209,558
Int. Cl.[3] B62B 1/08
U.S. Cl. 414—457 4 Claims



1. A knock down barrel or drum handling apparatus comprising a cradle which includes side rails rigidly connected together by inwardly and downwardly angled front and rear braces, a pair of upstanding lift flanges at one end of said cradle, each flange being connected to one of said rails, a handle telescoped into each rail, each rail having a set of downwardly extending channels including a front channel adjacent one of said lift flanges and a rear channel, the channels of each set having open sides facing each other, angled struts rigidly and fixedly joining each front channel to said front brace, a side frame associated with each rail, each side frame having a rear leg received within the rear channel and a front leg received within the front channel of its associated rail, fastener means removably connecting each side rail leg to the mating channel on its associated rail, front and rear sets of wheels removably coupled to a horizontal portion of each side rail, a crossed brace having its upper ends removably fastened to the rear channels and to rear legs of said side frames, the lower ends of said cross brace being removably fastened to lower ends of said rear legs of said side frames, whereby the apparatus may be knocked down without disconnecting any portion of the cradle and while disconnecting the side rails from all components connected thereto.

4,335,991

MOBILE TRANSPORT FOR FLUID CARGO

Philip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Inc., Fresno, Calif.

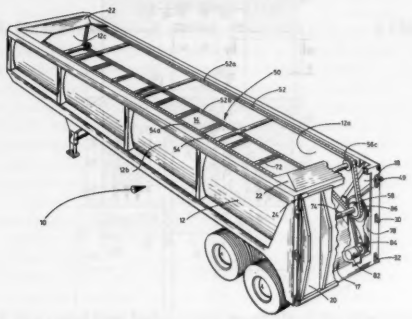
Filed May 1, 1980, Ser. No. 145,442
Int. Cl.[3] B60P 1/36
U.S. Cl. 414—519 5 Claims

1. In a mobile transport for fluidized cargo, the improvement comprising:

A. an elongated cargo box, characterized by a forward and a rear end, comprising a substantially horizontally oriented floor extended between a forward and a rear terminous and a substantially vertically oriented wall including a pair of side wall segments and a forward end wall segment, means defining between said side wall segments, a rear discharge opening arranged in a substantially vertical plane passing through the rear terminous of said floor;

B. means for establishing for said box a fluid-tight integrity

for fluidized cargo including a door adjacently related to said opening and pivotally supported for angular displacement into a sealing relationship with said opening, whereby leakage of the cargo through said opening is avoided when said door is displaced into a sealing relationship with said opening; and



C. an endless drag chain totally confined within said box and substantially extended between said forward end wall segment and the door when said door is displaced into a sealing relationship with the discharge opening including a lower run supported in scraping engagement with the upper surface of said floor and an upper run supported in vertically spaced relation with the lower run of the drag chain.

4,335,992

SIDE SHIFT FORK ADJUSTABLE CARRIAGE

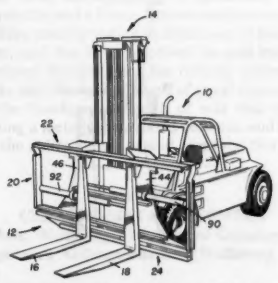
Jerry L. Reeves, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/00015, § 371 Date Jan. 7, 1980, § 102(e) Date Jan. 7, 1980, PCT Pub. No. WO81/02001, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 7, 1980, Ser. No. 130,487

Int. Cl.³ B66F *9/14*

U.S. Cl. 414—667 **16 Claims**



1. In a material handling vehicle (10) having a mast (14), a carriage assembly (12) connected to the mast (14) for vertical movement thereupon and first and second load lifting forks (16,18) each having a side, the improvement comprising:

track means (22,24) for movably connecting said forks (16,18) to the carriage assembly (12) for movement of the forks (16,18) between a first position at which respective sides of each fork are in contact with one another and a second position at which the respective sides of each fork (16,18) are spaced one from the other, said track means (22,24) including a first (22) pair of tracks having first (22*a*) and second (22*b*) spaced apart tracks each connected to the carriage assembly (12) in a generally horizontal plane, said horizontal plane generally perpendicular to the vertical movement of the carriage assembly (12) and first (26) and second (28) sliding bars each having inner end portions (26*a*,28*a*) and being connected to a respective fork (16 or 18) and slidably connected to a respective track (22*a* or 22*b*), said forks (16,18) being oriented substantially perpendicularly relative to the tracks (22*a*,22*b*) and said sliding bars (26,28) each having a length (L) sufficient for maintaining said forks (16,18) substantially perpendicular relative to the track (22*a* or 22*b*) and said tracks being positioned one relative to the other at locations sufficient for overlapping of the inner end portions of sliding bars at the first position of the forks (16,18).

4,335,993

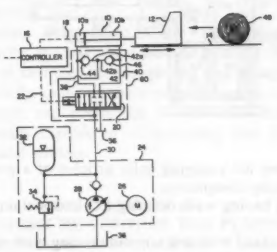
HYDRAULIC-POSITIONING SYSTEM FOR HIGH-IMPACT APPLICATIONS

Andrew Nowak, Portland, Oreg., assignor to Fluid-Air Components, Inc., Portland, Oreg.

Filed Apr. 28, 1980, Ser. No. 144,694

Int. Cl.³ B27B *29/00*

U.S. Cl. 414—748 **7 Claims**



1. A hydraulic positioning system for movably positioning a member subject to impact loading, said system comprising:

(a) hydraulic motor means having a chamber for receiving hydraulic fluid under pressure for moving said member in a predetermined direction in response to the introduction of hydraulic fluid under pressure into said chamber;

(b) a source of pressurized hydraulic fluid for supplying hydraulic fluid under pressure to said chamber;

(c) first fluid conduit means interconnecting said source of pressurized hydraulic fluid with said chamber for conducting said fluid to said chamber, said first fluid conduit means having fluid control valve means interposed therein for selectively permitting or preventing the flow of said fluid from said source of pressurized hydraulic fluid to said chamber through said first fluid conduit means;

(d) second fluid conduit means interconnecting said source of pressurized hydraulic fluid with said chamber in parallel relationship with said first fluid conduit means and bypassing said control valve means;

(e) said second fluid conduit means having one-way valve means interposed therein for preventing the flow of hydraulic fluid through said second fluid conduit means from said source of pressurized hydraulic fluid toward said chamber, said one-way valve means having means responsive to differences between the pressures of hydraulic fluid in said chamber and at said source of pressurized hydraulic fluid fluid respectively for permitting the flow of fluid through said one-way valve means and said second fluid conduit means from said chamber toward said source of pressurized hydraulic fluid when the pressure of hydraulic fluid in said chamber exceeds the pressure of hydraulic fluid at said source of pressurized hydraulic fluid by a predetermined amount;

(f) means automatically responsive to the movable position of said member for actuating said fluid-control valve

means so as to cause said hydraulic motor means to place said member in a predetermined position;

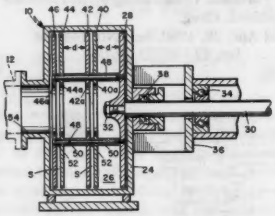
wherein said hydraulic motor means is mounted upon an elongate carriage having upwardly-facing means for supporting a log longitudinally with respect to said carriage, said member comprising a log-positioning member movably mounted upon said carriage for transversely positioning a log on said carriage in response to the introduction of hydraulic fluid under pressure into said chamber of said hydraulic motor means.

4,335,994

METHOD AND APPARATUS FOR PUMPING LARGE SOLID ARTICLES

Max I. Gurth, 1937 Dehesa Rd., El Cajon, Calif. 92020

Continuation of Ser. No. 938,223, Aug. 30, 1978, abandoned.
This application Jul. 7, 1980, Ser. No. 166,185
Int. Cl.³ F01D *1/36;* B65G *53/30*
U.S. Cl. 415—90 **11 Claims**



1. A pump for pumping solid articles of a predetermined size, said pump comprising:

a housing having walls defining a cylindrical impeller chamber,

an inlet coaxial with and communicating with said chamber, and

an outlet communicating with and extending outward with the outermost wall thereof at a tangent to the outer periphery of same chamber,

a multiple disc impeller rotatably mounted coaxially within said impeller chamber in said housing and having at least a first pair of coaxially disposed flat smooth continuous surface discs closely spaced a first distance apart defining a first path and so disposed within said housing to permit free flow of fluid via said first path therebetween to said outlet and defining a second path for unobstructed passage of articles of a predetermined size greater than said first distance from said inlet past said discs via said second path to said outlet.

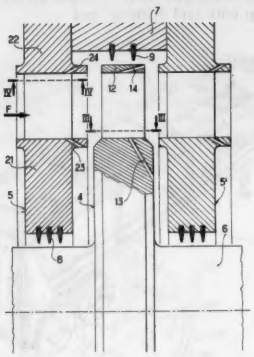
4,335,995

SET OF BLADES FOR A TURBINE AND A TURBINE WHICH INCLUDES SUCH A SET OF BLADES

Gilbert Riollet, Paris, and Raymond Bessay, Belfort, both of France, assignors to Alsthom-Atlantique, Paris, France

PCT No. PCT/FR79/00089, § 371 Date Jun. 5, 1980, § 102(e) Date May 30, 1980, PCT Pub. No. WO80/00728, PCT Pub. Date Apr. 17, 1980
PCT Filed Oct. 4, 1979, Ser. No. 196,792
Claims priority, application France, Oct. 5, 1978, 78 28459
Int. Cl.³ F01D *5/14;* F04D *29/68*
U.S. Cl. 415—144 **9 Claims**

1. A set of blades for a turbine, said set including an upper plate and a lower plate and a group of blades disposed between said upper plate and said lower plate and which therefore define a group of passages along which a turbine feed fluid flows, each passage being delimited by the concave surface of one blade and the convex surface of the blade next to it and by the lower plate and the upper plate and secondly, at least two ducts associated with each blade, one in the upper plate and the other in the lower plate, one end of each of these ducts opening into a passage and the other end of each of these ducts opening at a point located downstream from said set of blades, the improvement wherein, for each duct (**13**, **14**, **23**, **24**), the duct end which opens into the passage is located in proximity to the



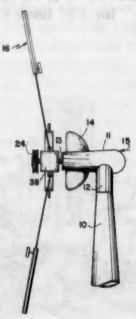
concave surface of one blade which delimits said passage, and remote from the convex surface of the other blade delimiting that passage, and at the flow constriction (**10**, **20**) at the level of maximum flow constriction between blades.

4,335,996

WINDMILL CONSTRUCTION

Joel M. Ross, R.R. #3, Salmon Arm, British Columbia, Canada (V0E 2T0)

Filed Dec. 1, 1980, Ser. No. 211,891
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—88 **19 Claims**

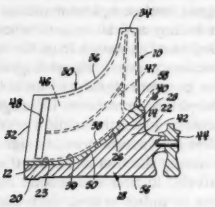


1. A windmill assembly comprising in combination a drive shaft, means supporting said drive shaft, a plurality of radially extending windmill airfoils and means extending from said shaft to support said airfoils symmetrically therearound, said means including a cable support member for each airfoil extending substantially at right angles to the longitudinal axis of said airfoil and upon either side thereof, and flexible cable means extending from said airfoil to said cable support members adjacent the distal ends thereof in a substantially one dimensional triangular configuration, and reel means for said flexible cable means adjacent said spindle, said flexible cable means running freely through said cable support members adjacent the distal end thereof and to said reel.

4,335,997
STRESS RESISTANT HYBRID RADIAL TURBINE WHEEL

Bruce A. Ewing, Martinsville, and Leonard C. Lindgren, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1980, Ser. No. 112,446
Int. Cl.³ F01D 5/14
U.S. Cl. 416—185 **1 Claim**



1. In a radial flow turbine rotor assembly of the type having a clearance bore therethrough for passage of a shaft and an equivalent stress pattern wherein a maximum equivalent stress occurs at said clearance bore and equivalent stresses decrease generally in proportion to radial outward distance from said clearance bore with equal stress levels exhibiting a generally cone-like distribution proceeding from a front portion of said rotor to a rear portion, the combination comprising, a metal hub having said clearance bore therethrough and wrought properties capable of withstanding during operation of said rotor assembly said maximum equivalent stress and including a cylindrical portion extending rearward from said front portion to an integral flared-back portion defining a frustoconical outer surface generally conforming to said cone-like distributions of levels of equal equivalent stresses, a bladed disc fabricated from a dissimilar metal incapable of withstanding said maximum equivalent stress during operation of said rotor assembly and including a plurality of radially extending blades interconnected by a central rim defining an outer surface flared back from said rotor front portion which outer surface cooperates with said blades in defining a plurality of aerodynamic gas flow passages of preselected dimensions, said disc further including a cylindrical bore corresponding in dimension to said hub cylindrical portion and a frustoconical cavity connected to said cylindrical bore corresponding in dimension to said hub flared-back portion, said disc being received on said hub so that the interface defined therebetween lies radially outboard of all of said cone-like distributions of levels of equal equivalent stresses exceeding the functional strength of said disc material, and means defining a metallurgical bond between said disc and said hub across the entire extent of said interface therebetween.

4,335,998
CERAMIC-METAL ASSEMBLY

Johann Siebels, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

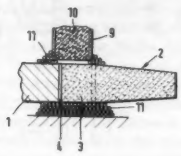
Filed May 18, 1979, Ser. No. 40,121
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822627
Int. Cl.³ F01D 5/30
U.S. Cl. 416—213 R **7 Claims**

1. An assembly comprising a metallic component and a nonoxidic ceramic component supported by said metallic component;

said metallic component having an opening therein and a recess communicating with said opening, said recess being defined by at least two opposite inwardly facing surfaces;

said ceramic component having a base portion disposed in said recess and a second portion projecting out of said recess through said opening, wherein said base portion and said surfaces define a gap therebetween for spacing said base portion from said metallic component;

said assembly further comprising a high temperature solder filling said gaps, said solder being applied in liquid form at elevated temperature, wherein said solder and said metallic component, due to the elevated application temperature and differences in thermal coefficients of expansion between said solder and metallic component and said ceramic component, are shrunk fit around said base portion for applying compressive stresses to said base portion,

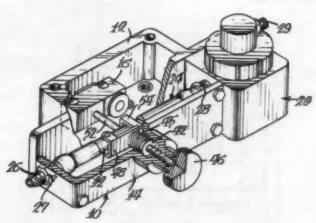


and wherein said metallic component has a reduced cross-sectional thickness normal to said surfaces in the region of said opening, said reduced thickness being effective to cause plastic deformation in said region of said metallic component, and to reduce the compressive stress, in said region, of said metallic component against said base portion, thereby reducing the tensile stresses on said ceramic component and producing a connection between said components capable of withstanding high thermal and mechanical stresses.

4,335,999
PRESSURE CONTROL FOR PUMPS

Robert E. Lamontagne, Boulder, and Jon V. Scull, Longmont, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Division of Ser. No. 932,520, Aug. 10, 1978, Pat. No. 4,212,591. This application Dec. 21, 1979, Ser. No. 106,238
Int. Cl.³ F04B 49/08
U.S. Cl. 417—38 **2 Claims**

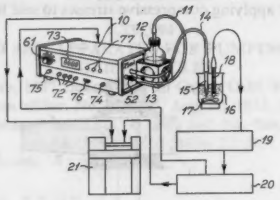


1. A device for controlling the output pressure of a pump or the like, said device comprising: an output line for transmitting fluid under pressure from said pump, said output line including a control hose portion having a length inconsistent with the length the control hose portion would assume when subjected to a predetermined variation in interval pressure, said control hose portion changing in length responsive to variations in the pressure of the fluid in the line; and means responsive to the change in length of said control hose portion for controlling the pump, wherein the control hose portion is initially deformed into an arcuate configuration, such that a centerline of the control hose portion lies along an arcuate path, and the ends fixed so that said changes in length result in variations in said arcuate configuration, and wherein said responsive means senses said variations in said arcuate configuration.

4,336,000
LIQUID DOSAGE PISTON PUMP

Hans Jorgensen, Vanlose; Ib O. Sinnerup, Copenhagen, and Ole E. Danborg, Horsholm, all of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Filed Dec. 31, 1979, Ser. No. 108,659
Claims priority, application Denmark, Jan. 3, 1979, 29/79
Int. Cl.³ F04B *39/00, 21/00;* G01N *1/14*
U.S. Cl. 417—53 19 Claims

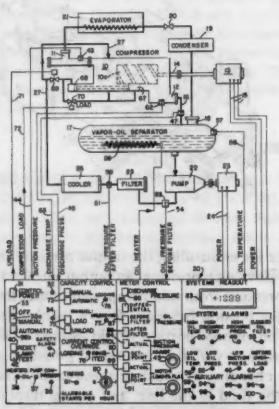


1. A method of removing gas or air bubbles from a liquid-containing cylinder chamber of a dosage piston pump including a pump cylinder and a piston displaceable in said cylinder so as to define said cylinder chamber therein, said method comprising introducing an additional, substantially greater volume of gas or air into said cylinder chamber for uniting said gas or air bubbles and said additional gas or air volume into a coherent total gas or air volume, subsequently discharging said coherent total volume of gas or air completely from said chamber as a substantially continuous gas flow, and introducing liquid into said cylinder chamber so as to obtain a cylinder chamber filled with liquid free of air or gas.

4,336,001
SOLID STATE COMPRESSOR CONTROL SYSTEM

Eduardo V. Andrew, Liverpool, N.Y.; Robert A. Naunas, Jr., Fairfield, Pa., and Richard C. Armstrong, Jr., Inwood, W. Va., assignors to Frick Company, Waynesboro, Pa.

Division of Ser. No. 943,887, Sep. 19, 1978, Pat. No. 4,227,862.
This application Apr. 17, 1980, Ser. No. 141,032
Int. Cl.³ F04B *49/02*
U.S. Cl. 417—63 4 Claims



1. A control system for connection with a fluid compressor driven by a motor, the compressor including loading valve means operative to adjust the capacity of the compressor by modulating fluid leakage from its discharge toward its inlet to maintain a desired suction pressure at the inlet, said system comprising:

(a) means in said inlet for measuring fluid suction pressure and delivering a suction pressure signal;

(b) means adjustable to select a compressor loading setpoint comprising a reference suction pressure signal;

(c) a loading actuator and an unloading actuator, said actuators being connected to operate said loading valve means selectively and progressively to load and unload the compressor;

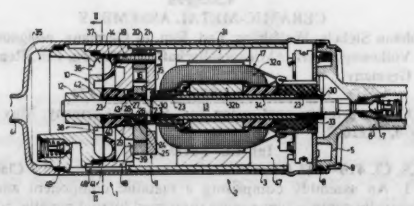
(d) pressure signal comparator means for comparing said measured suction pressure signal with said reference suction pressure signal, said comparator means having separate outputs including a first output whose amplitude represents the degree of deviation from the setpoint when the measured suction pressure signal is greater than the reference suction pressure signal and including a second output whose amplitude represents the degree of deviation from the setpoint when the suction pressure signal is less than the reference suction pressure signal; and

(e) means for converting the first and second outputs when present, respectively, to first and second control signals comprising trains of pulses whose duty cycles vary according to the amplitudes of said respective outputs, said means for converting said first and second outputs comprising separate comparators each having one input connected to one of said outputs, a triangular wave generator connected to the other input of each comparator, one comparator delivering an output control signal pulse which is present whenever one of said inputs exceeds the momentary level of the triangular wave, and the other comparator delivering an output control pulse whenever the other of said inputs exceeds the momentary level of the triangular wave, and means to establish a threshold level at the inputs to said comparators to provide a deadband within which said first and second outputs are too small to provide output control signals from the comparators; and said control signals being coupled respectively to said loading and unloading actuators and operative to control said actuators to load or unload the compressor in increments in response to the durations of said pulses.

4,336,002
TWO STAGE PUMP HAVING AN ELECTROMOTOR DEVICE

Klaus Rose, Mundelsheim; Ulrich Kemmner, Sachsenheim, and Karl Ruhl, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,170
Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622155
Int. Cl.³ F04B *23/14*
U.S. Cl. 417—203 4 Claims



1. A fuel supply unit comprising:
an elongated housing having a fuel inlet at one end and a fuel outlet at the other end,
a shaft mounted in said housing,

a two stage pump coupled for rotation on said shaft and located adjacent one end of said housing for pumping fuel entering said fuel inlet through said housing and discharging same out said fuel outlet,

an electric motor in said housing having an armature mounted on said shaft for driving said two stage pump and being exposed to fuel flowing from said fuel inlet to the fuel outlet,

said two stage pump comprising a first pump unit with an impeller and a second pump unit with an impeller, the impellers of both said pump units being mounted on said shaft for rotation by said armature and the inlet of said first pump unit being connected to said fuel inlet and the outlet of said first pump unit being connected to the inlet of said second pump unit with the outlet of said second pump unit being directed to said fuel outlet, said first pump unit being of the type which has a higher fuel flow and a higher delivery output per rotation than said second pump unit,

an air discharge duct connecting said outlet of said first pump unit with said fuel inlet for dispelling gases in the fuel being supplied to said second pump unit,

further including a recess means in the impeller of said second pump unit,

bushing means connected to said armature having an axial projection received in said recess,

ring means disposed on said shaft between the impeller of said second pump unit and the impeller of said first pump unit,

pin means carried by said ring and also received in said recess,

a recess in said ring means, and

an axial projection located on the impeller of said first pump unit and received in said recess in said ring means,

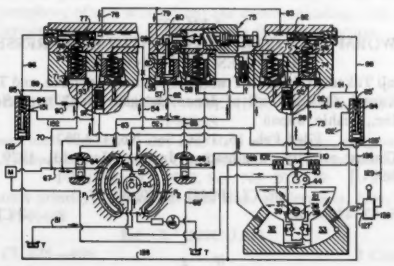
so that said armature, impellers and ring are in rotational locking engagement with one another.

4,336,003

CRANE SWING CONTROL

William D. Kramer, Powell, and Ellis H. Born, Columbus, both of Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,021
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—217 **2 Claims**



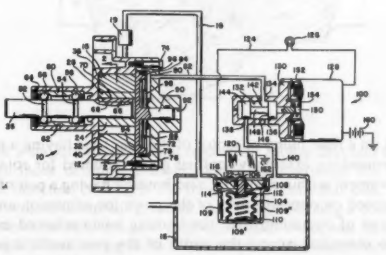
1. A variable displacement pump driven by a prime mover comprising: fluid motor means for setting the displacement of the pump between a position of maximum displacement in one direction and a position of maximum displacement in the other direction with a centered position of minimum fluid displacement therebetween; input control means for operating the fluid motor means to set the displacement at a desired value; adjustable sequence valve means for setting and limiting working fluid pressure including an adjustable pilot stage, a poppet and a seat; means biasing the poppet toward the seat to close the sequence valve; conduit means conducting working fluid to the top and bottom of the poppet; an orifice in the conduit means which causes the sequence poppet to lift off the seat when the pressure drop across the orifice reduces the force on top of the poppet by an amount equal to the force of the biasing means; and means for automatically reducing pump displacement when working fluid pressure equals the pressure setting of the sequence valve means and the sequence poppet lifts off the seat; characterized by a swing control comprising a control piston, means connecting the control piston to the input control means, spring means for biasing the control piston to a centered position to thereby put the input control means in the centered position, second pilot valve means for limiting working fluid pressure including a second seat and a movable member, passage means for connecting the second pilot valve means to the conduit means between the orifice and the top of the sequence valve poppet, second passage means for connecting the second pilot valve means to said means for automatically reducing pump displacement, means for providing a source of pressurized control fluid to the swing control wherein said control fluid moves the control piston to thereby move the input control means to set the displacement of the pump to a position proportional to the pressure of the control fluid, wherein said control fluid acts on the movable member of the second pilot valve means to set the working fluid pressure at an amount proportional to the pressure of the control fluid and said movable member moves off said second seat to pass working pressure fluid to said second passage means to reduce the displacement of the pump when the pressure of the working fluid equals the setting of the second pilot valve means, and said sequence poppet lifts off the seat after the movable member moves off the second seat when the pressure drop across the orifice reduces the force on top of the poppet by an amount equal to the force of the biasing means to thereby help to further reduce the displacement of the pump.

4,336,004

MOVABLE END PLATE FOR A VACUUM PUMP

Frederick G. Grabb, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 26, 1979, Ser. No. 107,125
Int. Cl.³ F04B *49/02, 49/08*
U.S. Cl. 417—283 **8 Claims**



1. In a pump having a housing with an operational chamber and a control chamber therein, a movable wall located in the operational chamber for separating an inlet port from an outlet port, and an input member for moving said movable wall in the operational chamber to transfer fluid from the inlet port and into the operational chamber while removing fluid from the operational chamber through the outlet port, said control chamber being connected to the surrounding environment, said housing including an end plate which seals said operational chamber characterized by the end plate being responsive to a predetermined pressure differential between the operational and control chambers for connecting the inlet port to the outlet port and thereby substantially reducing the resistance to movement of the wall within the operational chamber to correspondingly reduce the work requirement of the input member;

a switch connected in said operational chamber; said switch responding to the pressure of the fluid at the inlet port to develop an operational signal; and

a control valve device responsive to said operational signal for interrupting communication between the surrounding environment and said control chamber while connecting the control chamber to said inlet port to develop said predetermined pressure differential and permit the inlet and outlet port connection.

4,336,005

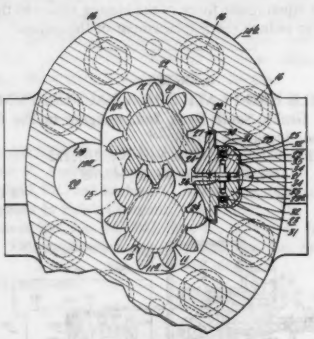
GEAR PUMPS AND MOTORS

James R. McBurnett, and James M. Eley, both of Corinth, Miss., assignors to Tyrone Hydraulics, Inc., Corinth, Miss.

Continuation-in-part of Ser. No. 29,891, Apr. 13, 1979, Pat. No. 4,266,915, which is a continuation-in-part of Ser. No. 923,094, Jul. 10, 1978, abandoned. This application Oct. 28, 1980, Ser. No. 201,475

Int. Cl.³ F04C *15/00*

U.S. Cl. 418—126 **8 Claims**



1. In a fluid pump or motor of the gear type having a pair of intermeshing externally toothed gears mounted for rotational movement within a housing, said housing having a pair of ports disposed on opposite sides of the gears for admission and discharge of operating fluid, the housing being relieved in a region extending across the width of the gear teeth, a pair of sealing members each being spaced radially from one of said gears, a recess in the housing adjacent one of said ports, said radially spaced sealing members each being disposed in said recess and each having and arcuate sealing surface conforming to the path of the tips of the gear teeth and forming with the gear teeth a zone of high pressure in communication with said adjacent port, each said sealing surface extending from a point adjacent the port at higher pressure for a distance sufficient to span the tips of adjacent teeth of the adjacent gear and extending transversely of the gears, each said radially spaced sealing member having a pair of supports extending in opposite directions beyond the gear side surfaces, said supports each having a planar support surface, means having planar support surfaces interfacing with the surfaces on said supports and transmitting load to the housing, said support means being constructed to limit movement of the radially spaced sealing members to a position of sealing relationship with said gear teeth and for transmitting the load imposed on the radially spaced sealing members directly into said housing.

4,336,006

GEAR POSITIVE DISPLACEMENT MACHINE WITH GAPS BETWEEN BEARING MEMBERS AND HOUSING

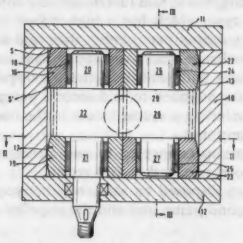
Kurt Grabow, Feucht; Willy Mahl, Ditzingen; Karl-Heinz Müller, Vaihingen; Heinrich Kochendörfer, Kernen; Dieter Bertsch, Neuhausen; Siegfried Mayer; Jörg Anhenn, both of Vaihingen, and Wilhelm Dworak, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,995

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2848994

Int. Cl.³ F01C *1/18, 21/02;* F16C *23/04*

U.S. Cl. 418—131 **9 Claims**



1. A gear positive displacement machine, comprising a housing having an inner wall; two gear members in said housing each having an axis and a shaft forming said axis, said gear members radially abutting against and meshing with one another, said gear members together with said housing defining a low pressure side and a high pressure side; bearing members in said housing and arranged for bearing said shafts of said gears, each of said bearing members having a peripheral face which together with said inner wall of said housing forms a gap at least at said low pressure side, said gap increasing in two axially opposite directions starting from a central transverse axis of said bearing members so that when said shafts of said gears bend during the operation, said bearing members exactly follow the bending line of said shafts.

4,336,007

WORM TYPE COMPRESSOR WITH COMPRESSED FLUID ESCAPE GROOVES

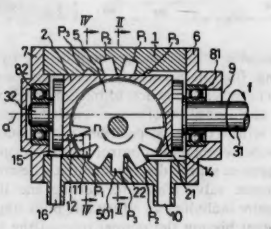
Kenji Takeda, Okazaki; Yoshiyuki Hattori, Toyoake, and Takao Kasagi, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 15, 1980, Ser. No. 122,052

Claims priority, application Japan, Mar. 13, 1979, 54-31868[U]

Int. Cl.³ F04C *18/00, 29/08*

U.S. Cl. 418—183 **3 Claims**



1. A worm type compressor comprising:

a cylindrical worm provided with a plurality of spiral-like passages in an inner periphery thereof;

said spiral-like passages being disposed with the same phase differences with each other, the depth of each of said spiral-like passages being maximum in the central portion of said worm in the longitudinal direction thereof and gradually decreasing in both end directions of each of said spiral-like passages;

a column-shaped rotor disposed coaxially within said worm and contacted with the inner periphery thereof so that said worm and said rotor may be rotated relatively to each other;

said rotor being provided with a cavity having an approximate circular shape in the axial direction thereof and an axially extending opening in the outer periphery of said rotor, which is communicated with said cavity;

a pinion gear disposed within said cavity and rotatably supported about an axis perpendicular to and spaced from the rotational axis of said rotor by a predetermined distance;

a portion of the teeth of said pinion gear projecting from said axially extending opening and being engaged within said spiral-like passages, respectively;

a plurality of fluid sealing chambers formed respectively by each of said spiral-like passages of said worm, each tooth of said pinion gear which is engaged with each of said spiral-like passages, and the outer periphery of said rotor, the volume of each of said plurality of fluid sealing chambers being varied according to the travel of each tooth of said pinion gear within each of said spiral-like passages of said worm;

a fluid inlet means for introducing the fluid into said fluid sealing chambers;

a fluid outlet means for discharging the fluid from said fluid sealing chambers;

said fluid outlet means comprising an internal fluid outlet port formed in the outer periphery of said rotor near but spaced circumferentially from said axially extending opening so as to be opposed to and communicated with each of the finishing portions of said spiral-like passages in turn as said rotor is rotated; and

a compressed fluid escape means provided in each of said finishing portions of said spiral-like passages of said worm for letting one portion of the compressed fluid escape from each of said spiral-like passages when each tooth of said pinion gear passes each of said finishing portions of said spiral-like passages, said escape means comprising a narrow groove extending circumferentially in the inner periphery of said worm from and communicating with the terminal end of the corresponding finishing portion.

4,336,008

ADJUSTABLE SPACER ASSEMBLY FOR PLATEN PRESS

Jürgen Pesch, Krefeld-Traar, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,429

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946468

Int. Cl.³ B29C *3/00*

U.S. Cl. 425—406 **2 Claims**

1. A platen press comprising:

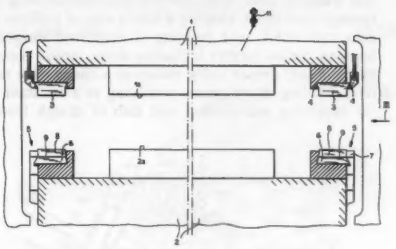
a pair of platens having respective confronting and parallel platen surfaces and each having a pair of longitudinal edges;

respective solid spacer bars fixed to said longitudinal edges of one of said platens and having respective spacer surfaces parallel to and between said platen surfaces;

means for releasably securing said spacer bars to the respective longitudinal edges;

respective adjustment bars secured to said longitudinal edges of the other of said platens and each having an adjustment surface parallel to and confronting the respective spacer surface, each of said adjustment bars being formed of an outer wedge having a pair of nonparallel faces one of which is the respective bar surface, and of an inner wedge having an outer face flatly engaging the other face of the respective outer wedge;

means for relatively longitudinally displacing said inner and outer wedges and thereby displacing the respective adjustment surfaces perpendicular to the respective platen surfaces; and



means for displacing said platens toward each other perpendicular to said surfaces for engagement of said spacer surfaces flatly with the respective adjustment surfaces.

4,336,009

MOLDING TOOL

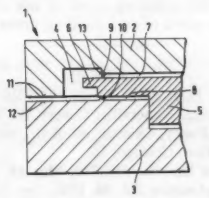
Franz-Josef Wolf, Bad Soden Salmunster, Fed. Rep. of Germany, assignor to WOCO Franz-Josef Wolf & Co., Bad Soden Salmunster, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 207,933

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1979, 2947621

Int. Cl.³ B29C *1/00, 6/02*

U.S. Cl. 425—116 **3 Claims**



1. In a molding tool having oppositely facing first and second surfaces defining a mold cavity therebetween for the rubber injection coating of the outer rim of a circular disk, the improvement comprising: means for sharply defining a boundary transition between said coating on said outer rim of said disk and the remaining surfaces of said disk, said means including oppositely facing, triangular cross-sectioned projections extending merely a fraction of a millimeter from said first and second surfaces, and which projections engage said disk sufficiently close to said boundary transition during injection of said coating to result in no noticable impression in said disk except upon removal of said coating.

4,336,010

DOUGH FORMING, DIVIDING AND CUTTING APPARATUS

Daniel T. Thompson, 1141 Napoli Dr., Pacific Palisades, Calif. 90272

Filed Sep. 2, 1980, Ser. No. 183,187

Int. Cl.³ B29C *15/00;* **A21C** *5/00*

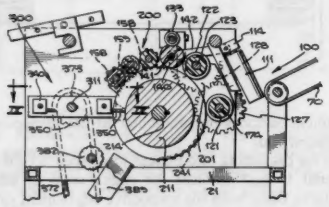
U.S. Cl. 425—141 **12 Claims**

1. An apparatus for rapidly and continuously shaping an irregular mass of dough into a plurality of individual dough elements of controllable weight, comprising:

forming means for shaping said irregular mass into a continu-

ous dough slab of uniform thickness and width said forming means having an input means for receiving said irregular mass and an output means through which a slab of dough of uniform thickness and width is emitted, said forming means including driven roller means for pulling said irregular mass progressively into said forming means through said input, shaping it into a slab of uniform thickness and width, and emitting it from said output, said forming means further including drive means connected to drive said driven roller means at a changeable rate;

driven dividing drum means revolving at a constant speed for receiving and pulling said slab of dough from said



output means and for dividing said slab into a plurality of dough strips of the same uniform cross-sectional area;

sensing means operably connected to said drive means for sensing the thickness of said slab being received by said dividing drum means and for speeding up said drive means when said thickness is too thin and for slowing down said drive means when said thickness gets too thick whereby said thickness is maintained generally constant; and,

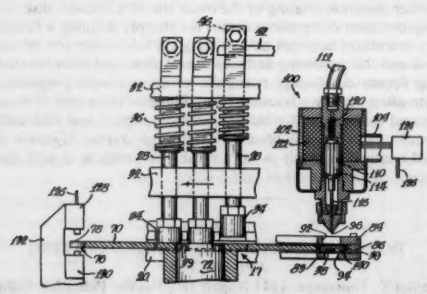
driven cutting means for continuously dividing said strips into a plurality of individual dough elements of generally equal length with the length of said elements being determined by the operating speed of said cutting means relative to the speed of said dividing drum means.

4,336,011

APPARATUS FOR APPLYING LINERS TO CLOSURES

Robert W. George, Naperville; Casper W. Miller, Mundelein, and Kenneth Rapey, Chicago, all of Ill., assignors to National Can Corporation, Chicago, Ill.

Continuation of Ser. No. 906,770, May 18, 1978, abandoned.
This application Jul. 24, 1980, Ser. No. 172,076
Int. Cl.³ B29C *13/02*
U.S. Cl. 425—129 R **6 Claims**



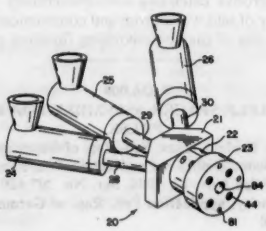
2. A cap lining machine having a continuously rotating molding and curing head with a plurality of circumferentially spaced stations defined on the periphery thereof and movable along a path, each station having a recess for receiving a cap and a plunger reciprocated between open and closed positions with means for moving said plunger between said positions during each cycle of revolution for said head, feed means for continuously supplying unlined caps having a curable fluid compound to each station, take-off means for removing lined caps from respective stations, and stationary heating means adjacent said molding and curing head between said feed means and said take-off means for supplying heat to said curing and molding head and maintaining the temperature of each station substantially above ambient temperature, the improvement of said feed means including a continuously rotating feed wheel having a plurality of circumferentially spaced pockets, unlined cap supply means for feeding caps to respective pockets, and curable fluid compound dispensing means for dispensing metered quantities of compound at a rate greater than 1000 cycles per minute to said respective unlined caps in said pockets, said dispensing means including a housing having a chamber defined therein with an inlet and an outlet at opposite ends of said chamber, a member in said chamber having a needle for opening and closing said outlet, said member and chamber cooperating to define an annular path between said inlet and said outlet, solenoid means surrounding said chamber for reciprocating said member and needle between open and closed positions, and pressurized compound supply means connected to said inlet for supplying compound at substantially room temperature to flow through said flow path when said outlet is open and be delivered to said caps at substantially room temperature, said caps with said compound therein being transferred from said pockets to said recesses while said plungers are in an open position, said plungers being moved to a closed position after said caps are received in said recesses to mold said compound, said heating means curing said compound while said caps are moved between said feed means and said take-off means, and said plungers are moved to an open position adjacent said take-off means to allow said caps to be removed from said recess.

4,336,012

COEXTRUSION DEVICE

Paul E. Koch, Chagrin Falls; Thomas J. Bond, and Richard C. Adams, both of Chardon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 20, 1980, Ser. No. 198,312
Int. Cl.³ B29F *3/04, 3/00*
U.S. Cl. 425—131.1 **30 Claims**



1. A coextrusion device, for use with conventional extruders and extrusion dies for forming layered products from at least two materials, comprising:

manifold means for receiving a plurality of extruded feed materials wherein individual feed materials are directed into separate flow streams passing therethrough;

feedblock means receiving said flow streams of feed materials from said manifold and maintaining each separate while passing therethrough;

said feedblock having

first and second faces;

entrance ports in said first face corresponding to the number of said flow streams of feed materials;

channel means passing through said feedblock between said first and second faces reducing the cross-sectional

area of each separate flow stream and directing each flow stream into at least one separate profile;

exit ports in said second face corresponding to the number of said channel means, defining a first profile for each said flow stream of feed material; and

adaptor means receiving said first profiles from said feedblock

said adaptor means having

first and second faces;

an entrance port in said first face receiving said first profiles;

an exit port in said second face corresponding to the entrance of an extrusion die; and

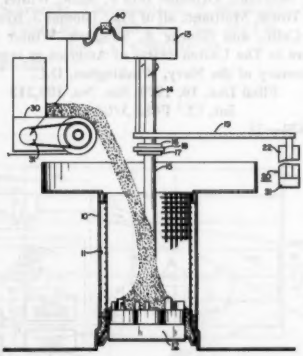
a transition zone between said entrance and exit ports wherein said first profiles become contiguous and the overall configuration of said contiguous first profiles is adapted for receipt by an extrusion die.

4,336,013

APPARATUS FOR FORMING CONCRETE ARTICLES OF UNIFORM DENSITY

George E. Hand, Williamstown, N.J., assignor to Kerr Concrete Pipe Company, Folsom, N.J.

Filed May 16, 1979, Ser. No. 39,316
Int. Cl.[3] B28B *3/18, 21/24*
U.S. Cl. 425—145 3 Claims



1. An apparatus for forming concrete pipe of uniform density comprising:

(a) means for forming concrete into the form of said pipe comprising a mold having an inner wall, a packing head for packing concrete against said inner wall, a shaft centrally mounted on said packing head, an electric packing head motor for revolving said packing head through the mold; and means for raising said packing head only at a fixed rate;

(b) means for feeding concrete to said forming means;

(c) a feed motor for driving said concrete feeding means;

(d) means for sensing and measuring current in said packing head motor, said current being a function of torque generated in said packing head;

(e) means for comparing said sensed current to a preset current; and

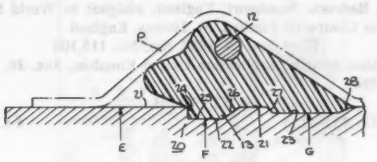
(f) means for controlling the speed of said feed motor responsive to said sensing and comparing means.

4,336,014

SYSTEM FOR MOUNTING A FORMING ELEMENT ON A MANDREL

Gunnar Parmann, Alvoy, Norway, assignor to Rieber & Son A/S, Bergen, Norway

Filed Sep. 15, 1980, Ser. No. 187,495
Int. Cl.[3] B29C *17/02*
U.S. Cl. 425—403 13 Claims



1. In combination

an annular forming and sealing element including a body of elastically yieldable material defining an annular sealing portion having an inner diameter on an interior surface thereof and a trailing end of a wedge-shaped cross-section, and a rigid relatively non-elastic annular ring of circular cross-section disposed within said body at least partially in a plane of said sealing portion; and

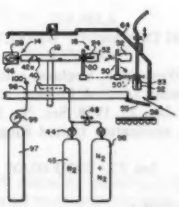
a mandrel having said element mounted thereon, said mandrel having a peripheral anchoring surface of an outer diameter greater than said inner diameter of said sealing portion and including one annular anchoring groove therein sized to receive said sealing portion therein in deformed relation to anchor said element to said mandrel in fixed relation, said groove having a sharply defined forward annular wall abutting said sealing portion to preclude advancement of said element along said mandrel.

4,336,015

APPARATUS FOR BLOW MOLDING WITH ACTIVE INGREDIENT IN BLOWING GAS

Dewey N. Rainville, 11 Kent Pl., Westfield, N.J. 07090

Filed Nov. 27, 1979, Ser. No. 97,805
Int. Cl.[3] B29C *17/07, 25/00*
U.S. Cl. 425—74 11 Claims



1. Injection blow molding apparatus comprising a plurality of operational stations including an injection station, a blowing station, a stripper station, and an indexing head around which the stations are located and spaced at equal angles and from which core rods extend into the respective stations, a housing spaced from and enclosing the blowing station and the stripper station to shut off gas that is used in the blowing station and the stripper station from the ambient atmosphere outside of the housing, apparatus for blowing containers at the blowing station with gas containing hazardous fumes, means for venting to space within said housing the gas containing the hazardous

fumes from the blown container and from objects blown at the blowing station by gas containing the hazardous fumes, and means for collecting from said space the gas containing the fumes and for supplying the hazardous gas to the blowing station for subsequent blowing operations where the blown container is filled with the hazardous gas mixture.

4,336,016

BURNERS

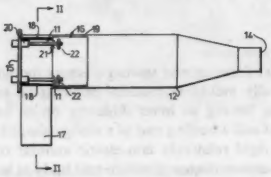
John Badrock, Southport, England, assignor to World Stress (Gas Contracts) Limited, St. Helens, England

Filed Jan. 24, 1980, Ser. No. 115,108

Claims priority, application United Kingdom, Jan. 26, 1979, 7902764

Int. Cl.³ F23M *9/00*

U.S. Cl. 431—158 **6 Claims**



1. An industrial gas burner comprising a substantially cylindrical housing having one tapered end through which combustion products are discharged and having a closed second end, a partition axially dividing said housing into an air inlet plenum adjacent said closed end and a combustion chamber adjacent said discharge end, an air inlet arranged transversely to said plenum and comprising means for conducting air tangentially into said plenum and in a swirling fashion around the axis of said housing, said partition including a ring having a plurality of holes, a gas jet nozzle positioned within each of said holes with a clearance between each of said nozzles and a respective one of said holes, a collar disposed about each nozzle and within said combustion chamber, said clearances comprising means for conducting swirling air from said plenum into said combustion chamber, said collars obstructing said clearances and comprising means for directing air outwardly, away from the nozzles, thereby permitting gas from said jet nozzles to spread, said nozzles and said partition being mounted to said housing.

4,336,017

FLARE WITH INWARDLY DIRECTED COANDA NOZZLE

Denis H. Desty, Weybridge, England, assignor to The British Petroleum Company Limited, London, England

Filed Jan. 23, 1978, Ser. No. 871,531

Claims priority, application United Kingdom, Jan. 28, 1977, 03518/77

Int. Cl.³ F23D *00/00*

U.S. Cl. 431—202 **10 Claims**

1. A flare, comprising:

a flow tube having an inlet end portion and an outlet end portion;

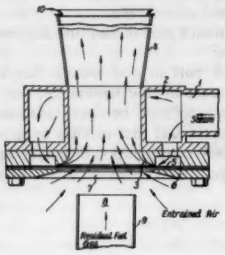
said inlet end portion of said flow tube including a Coanda nozzle directed towards the interior of said flow tube;

means for passing a pressurized gas through said Coanda nozzle and thereafter, together with entrained surrounding gas, along the inside of said flow tube;

said flow tube transporting the gas flow to the outlet end portion thereof;

said Coanda nozzle including a circumferentially extending outlet slot through which said pressurized gas flows and a circumferentially extending Coanda surface inside said flow tube contiguous with one edge of said Coanda nozzle outlet slot, the opposite edge of said Coanda nozzle outlet slot comprising a resilient flap arranged to flex in response to the pressure of said pressurized gas passing through said Coanda nozzle outlet slot to vary the effective slot width thereof;

said resilient flap comprising an annular ring, the outer circumferentially extending edge of which is fixed while



the inner circumferentially extending edge thereof is free to move in response to said pressure of said pressurized gas; and

means for directing low pressure gas into the inlet portion of said flow tube, said means located at a predetermined fixed spatial position relative to said Coanda nozzle during use of the flare.

4,336,018

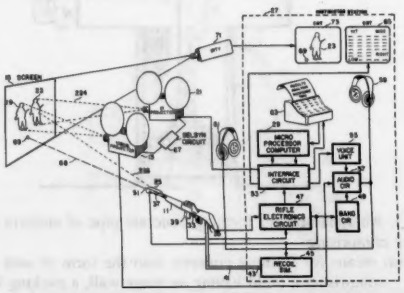
ELECTRO-OPTIC INFANTRY WEAPONS TRAINER

Albert H. Marshall, Orlando; Bon F. Shaw, Winter Park; Herbert C. Towle, Maitland, all of Fla.; Thomas J. Riordan, Santa Clara, Calif., and George A. Siragusa, Winter Park, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1979, Ser. No. 105,313

Int. Cl.³ F41J *5/08, 5/10*

U.S. Cl. 434—22 **31 Claims**



31. A weapon fire simulation system comprising, in combination:

projection apparatus having a plurality of outputs for simultaneously and coordinately projecting onto a screen a background scene including a visual target and an infrared target;

a weapon having a trigger mechanism attached thereto;

a sensor element attached to said weapon, said sensor element having a quartet of photodiodes, each of which is adapted for producing an analog output signal upon sensing said infrared target;

a quartet of sensor circuits, each of which has a signal input and an enable input, and a data output, with the signal

inputs thereof respectively connected to the outputs of said quartet of photodiodes;

an enable circuit mechanically coupled to the trigger mechanism of said weapon and having an enable output connected to the enable inputs of said quartet of sensor circuits, and a data ready strobe output, for generating an enable signal and providing a data ready pulse so as to allow the reading out of the data appearing at the data outputs of said quartet of sensor circuits whenever said trigger mechanism is operated;

an interface circuit having a quartet of data inputs respectively connected to the quartet of data outputs of said sensor circuits, a data ready strobe input connected to the data ready strobe of said enable circuit, a plurality of computer inputs, and a plurality of computer outputs, for receiving from said sensor circuits the data word provided thereby, and for storing said data word therein; and

a computer having a plurality of inputs respectively connected to the computer outputs of said interface circuit, and a plurality of outputs respectively connected to the computer inputs of said interface circuit, for supplying to said interface circuit a predetermined address word so as to effect the transfer of said data word from said interface circuit to said computer, wherein said computer performs an analysis of said data word in accordance with a predetermined computer program stored therein so as to indicate to a trainee rifleman whether said trainee rifleman has scored a hit upon said visual target.

4,336,019

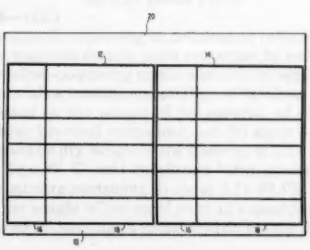
EDUCATIONAL ACCOUNTING GAME

Thomas D. Schroeder, 7 Woodbine St., S. Burlington, Vt. 05401

Filed Oct. 28, 1980, Ser. No. 201,116

Int. Cl.³ G09B *19/18*

U.S. Cl. 434—109 **2 Claims**



1. An educational accounting game comprising a game board having four columns of boxes printed thereon, two for assets and two for liabilities, and a sheet of separable game pieces having accounting legends and assorted numerical values printed thereon, the printed surface of the game board and the surface of said sheet of game pieces opposite the printing having complementary engaging means thereon for temporarily holding individual game pieces in position on said game board and each game piece having an accounting legend thereon being of a different color and said game pieces having numerical values thereon being of different colors corresponding to the colors of the game pieces having accounting legends thereon whereby those pieces having a legend designating an asset are placed in the first column, those pieces having a legend designating a liability are placed in the third column and those pieces having numerical values thereon are placed in the second and fourth columns according to color.

4,336,020

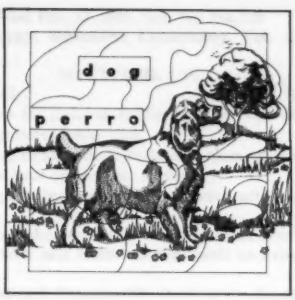
JIGSAW PUZZLE FOR USE IN BILINGUAL EDUCATION

David Zacharin, P.O. Box 76, Graton, Calif. 95444

Filed Jul. 15, 1980, Ser. No. 169,187

Int. Cl.³ G09B *5/04*; A63F *9/10*

U.S. Cl. 434—157 **6 Claims**



1. Educational apparatus comprising:

board means having a raised border around a recessed area;

sheet means marked with numerous words, said sheet means fitted within said recessed area;

a set of jigsaw puzzle pieces for assembly over said sheet means, said puzzle pieces when completely assembled forming a picture covering all of the words on said sheet means except for the words which represent said picture, said picture being formed solely by said jigsaw puzzle pieces, said representative words appearing through predetermined windows formed by edges of said puzzle pieces.

4,336,021

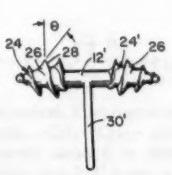
EMERGENCY BELTING AND KIT

William M. Haines, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed May 14, 1979, Ser. No. 39,069

Int. Cl.³ F16G *3/07*

U.S. Cl. 474—256 **10 Claims**



1. In an endless belt assembly including a belt of elastomeric material having internal cavities in the ends thereof, and coupling means having respective end gripping means securely engaged in the internal cavities of the belting, the improvement comprising:

a coupling means having a smooth central shank portion and having one of the respective end gripping means formed of a helical rib projecting radially outwardly from the shank portion, and the other of the end gripping means in the configuration of a sharp edged head;

said rib penetrating the wall of the elastomeric belt and substantially embedding therein; and

said central shank portion adapted and arranged to engage lever arm means for rotating the coupling about its shank axis to couple the ends of the belt together.

4,336,022

ACRYLIC PRECURSOR FIBERS SUITABLE FOR PREPARING CARBON OR GRAPHITE FIBERS

Charles E. Lynch, Camden, S.C., and William K. Wilkinson, Waynesboro, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 62,908, Aug. 1, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 230,030

Int. Cl.³ C08F *8/44, 220/46;* D06C *7/04*

U.S. Cl. 8—115.5 3 Claims

1. Process for preparing precursor fibers for the preparation of carbon or graphite fibers wherein an acrylic fiber of an acrylic polymer containing 93–99.4 mol percent acrylonitrile units, 0.6–4.0 mol percent ammonia or amine having a pKb of 5 or less incorporated into the polymer as neutralizing cations for sulfate or sulfonate end groups derived from the initiator and activator, if present, and as neutralizing cations for sulfonate groups incorporated into the polymer by copolymerization of one or more copolymerizable, sulfonate containing comonomers selected from the group consisting of styrene sulfonic acid, allyl sulfonic acid, methallyl sulfonic acid, 2-acrylamido-2-methylpropane sulfonic acid and ethylene sulfonic acid and 0–3.0 mol percent of units of one or more neutral comonomers selected from the group consisting of alkyl acrylates having 1–4 carbon atoms in the alkyl group, alkyl methacrylates having 1–4 carbon atoms in the alkyl group, vinyl acetate, vinyl propionate, styrene, vinyl chloride and vinylidene chloride and no more than 0.3 mol percent neutralizing cations other than ammonia or amine having a pKb of 5 or less are heated for 4–20 minutes in one or more stages in air at a temperature at least 10° below the stick temperature of the fibers entering that stage to provide fibers having a density of at least 1.36 g/cm^3.

4,336,023

FORMALDEHYDE-FREE DURABLE PRESS FINISH FABRICS

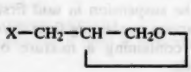
Charles E. Warburton, Jr., Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 30, 1980, Ser. No. 221,683

Int. Cl.³ D06M *15/12*

U.S. Cl. 8—115.7 5 Claims

1. A process for imparting to cellulose or cellulose-containing textile materials durable press properties by treating cellulose or cellulose-containing textile materials by applying to the textile materials a treating composition of (a) about 1–25% by weight, based on dry weight of the material, of an activated water-soluble bis-vinyl compound, and (b) about 0.2–25% by weight, based on dry weight of the material, of (1) a copolymer having a Tg<20° C., said copolymer being produced from a monomer mixture containing (i) about 0.25–99.5% by weight, based on the weight of the copolymer, of a quarternary monomer obtained by reacting an epihalohydrin having the formula:



with an ammonium salt having the formula:

$$CH_2{=}C(R)C(O)O\text{-}A\text{-}N(CH_3)_2.HY,$$

wherein R is H or methyl, A is a (C_2–C_6)alkylene group having at least two carbons in a chain between adjoined O and N atoms or A is a polyoxyethylene group, $(CH_2CH_2O)_nCH_2CH_2$, wherein n is an integer of at least 1, X is iodine, bromine, or chlorine, and Y is an anion, and (ii) at least one copolymerizable ethylenically unsaturated monomer, or (2) the reaction product of a copolymer of said ammonium salt and said epihalohydrin, and (c) sufficient aqueous base to effect a pH of about 9–12; drying the treated textile material at a temperature of about 100°–150° C. and heating the treated textile material at a temperature of about 130°–200° C. for a time sufficient to cure the treating composition.

4,336,024

PROCESS FOR CLEANING CLOTHES AT HOME

Serge Denissenko, and Jean-Claude Rossard, both of Migne-Auxances, France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Feb. 13, 1981, Ser. No. 234,220

Claims priority, application Luxembourg, Feb. 22, 1980, 82193

Int. Cl.³ D06L *1/02*

U.S. Cl. 8—142 10 Claims

1. A process for cleaning textile materials with the aid of solvent, said process comprising

(A) applying to said textile material a cleaning agent comprising at least one organic solvent;

(B) placing an absorbent sheet in contact with said textile material;

(C) covering the surface of said absorbent sheet not in contact with said textile material with an impermeable sheet;

(D) forming said impermeable sheet into a closed system encompassing the absorbent sheet and the textile material;

(E) spinning said closed system on the interior circular surface of a drum to enable the cleaning agent to migrate into the absorbent sheet; and

(F) removing the textile material from the closed system.

4,336,025

COMPOSITION CONTAINING COLORANTS AND ESTERIFIED OXALKYLATES OF AROMATIC HYDROXY COMPOUNDS

Manfred Schneider, Eppstein; Hubert Kruse, Kelkheim, and Konrad Opitz, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

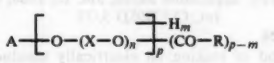
Filed Jun. 8, 1981, Ser. No. 271,569

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021712

Int. Cl.³ C09B *67/10;* D06P *67/00*

U.S. Cl. 8—527 9 Claims

1. Composition of matter comprising a colorant and a water-soluble compound of the formula I



(I)

wherein A is an aryl radical, X represents identical or different groups of the formula —CH_2—CH_2— and —CH_2—CH(CH-3)—, R—CO— denotes identical or different radicals of a carboxylic acid having up to 22 C atoms, n represents identical or different numbers from 8 to 150, p is a number from 1 to 10 and m represents 0 up to (p-0.5).

4,336,026

LIQUID PREPARATION OF AN ANIONIC DYE OF THE DISAZO CLASS

Roger Lacroix, Village-Neuf, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

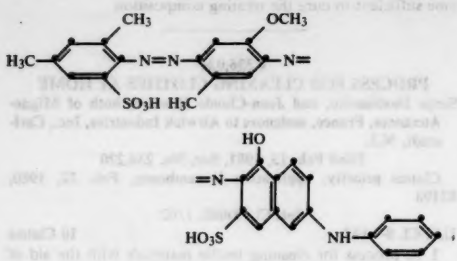
Filed Jan. 19, 1981, Ser. No. 226,573

Claims priority, application Switzerland, Feb. 5, 1980, 915/80

Int. Cl.³ D06P *67/00*

U.S. Cl. 8—527 10 Claims

1. A stable and concentrated liquid preparation of an anionic dye of the disazo class, which preparation is miscible with water in any proportion and contains the disazo dye, which in the form of the free acid corresponds to the formula



dissolved in a solvent mixture which is miscible with water in any proportion and which consists of N,N,N',N'-tetramethylurea, at least one alkylene glycol ether and water, and alkyl- or alkanolamine in an amount sufficient to bring the pH value of the liquid preparation to 6.5 to 8.5, the dye being in the form of the alkyl- or alkanolamine salt.

4,336,027

DYEING AND MARKING AGENT

Reinhold Tussing, Redwitz, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,954

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1979, 2952414

Int. Cl.³ C09B *67/00*; C09D *11/16*

U.S. Cl. 8—611 **5 Claims**

1. A dyeing and marking agent comprising a solution of a dye in a liquid medium consisting either completely or predominantly of one or more organic solvents, and from about 0.5% to 20% by weight, referred to the dye, of an alkali alcoholate.

4,336,028

METHOD OF MAKING ELECTRICALLY CONDUCTING FIBERS

Shinji Tomibe, Kyoto; Reizo Gomibuchi, Uji, and Kiyofumi Takahashi, Yawata, all of Japan, assignors to Nihon Senmo Dyeing Co., Ltd., Kyoto, Japan

Filed Jul. 15, 1981, Ser. No. 283,749

Claims priority, application Japan, Jul. 15, 1980, 55/97128

Int. Cl.³ B05D *5/12*

U.S. Cl. 8—624 **6 Claims**

1. A method of making an electrically conducting fiber comprising treating an acrylic fiber or modacrylic fiber in a bath containing divalent copper ions, a reducing agent capable of reducing said copper ions to monovalent copper ions and a sulfur-containing compound to convert said monovalent copper ions to copper sulfide wherein said fiber adsorbs copper sulfide.

4,336,029

METHOD AND REAGENTS FOR QUANTITATIVE DETERMINATION OF RETICULOCYTES AND PLATELETS IN WHOLE BLOOD

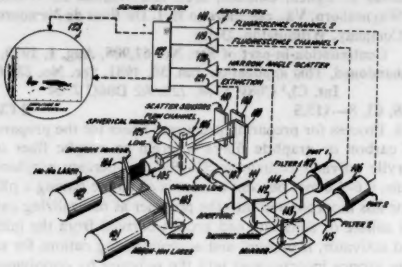
Peter J. Natale, Canton, Mass., assignor to Ortho Diagnostic Systems Inc., Raritan, N.J.

Filed Aug. 15, 1980, Ser. No. 178,481

Int. Cl.³ G01N *21/64, 33/52*

U.S. Cl. 23—230 B **4 Claims**

1. A dye composition for quantitation of reticulocytes and platelets in a whole blood sample by fluorescence using flow cytometry which consists essentially of an aqueous solution of an effective reticulocyte and platelet quantitating concentration of acridine orange dye, an effective magnesium ion chelating amount of citrate ion, and an effective maximum acridine uptake promoting concentration of an amino-reacting reagent;



the aqueous solution having a pH of from about 7.3 to about 7.5 and having a physiological level of osmolality.

4,336,030

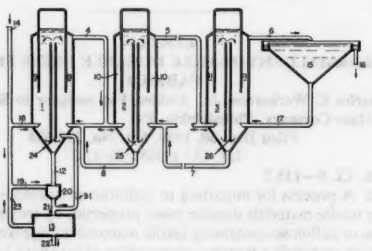
PROCESS FOR CONTINUOUS CRYSTALLIZATION

Tore B. Müller, Blomsterveien 30, Raelingen, 2000 Lillestrøm, Norway

Division of Ser. No. 852,514, Nov. 17, 1977, abandoned. This application May 8, 1979, Ser. No. 37,305

Int. Cl.³ B01D *9/02*

U.S. Cl. 23—301 **8 Claims**



1. A process for the continuous crystallization of at least one crystallizable material from a solution using a series of crystallization tanks, the process including the steps of

(a) feeding a feed solution containing at least one crystallizable material to a first crystallization tank in the series;

(b) initiating a partial crystallization of said feed solution in said first crystallization tank to form a suspension;

(c) classifying the suspension in said first tank to obtain a suspension fraction containing finer crystals and a suspension fraction containing a mixture of both finer and coarser crystals;

(d) passing a first portion of said suspension fraction containing finer crystals to at least one additional crystallization tank in the series;

(e) recirculating a second portion of said suspension fraction containing finer crystals from said first crystallization tank back to said first crystallization tank;

(f) initiating a further crystallization of said crystallizable material in the suspension in each of said additional crystallization tanks;

(g) classifying the suspension in each of said additional crystallization tanks to obtain a suspension fraction containing finer crystals and a suspension fraction containing a mixture of both finer and coarser crystals;

(h) recirculating the suspension fraction containing a mixture of both finer and coarser crystals from each of said

additional crystallization tanks to the previous crystallization tank;

(i) passing a first portion of the suspension fraction containing finer crystals from each additional crystallization tank except the last tank thereof to a subsequent crystallization tank in the series;

(j) recirculating a second portion of the suspension fraction containing finer crystals from each additional crystallization tank in the series except the last tank back to the tank from which it came;

(k) passing said suspension fraction containing finer crystals from the last tank in said series to a separator to obtain a mother liquor fraction as discharge and a recovered, concentrated fraction;

(l) returning said recovered, concentrated fraction to the last tank in said series;

(m) passing descending coarse crystals isolated by settling out from said suspension fraction containing a mixture of both finer and coarser crystals in said first crystallization tank countercurrent to a liquid solution arriving from a separator system;

(n) adding the liquid solution to said separator system to mix with said coarse crystals to form a coarse crystal suspension;

(o) separating said coarse crystals from said coarse crystal suspension in said separator system to form product crystals and a residual solution; and

(p) mixing said residual solution with at least a portion of the feed solution containing at least one crystallizable material to form said liquid solution of step (n).

4,336,031
METHOD FOR THE CALIBRATION OF AN OXYGEN SENSING UNIT AND CALIBRATION AGENT THEREFOR

Joachim Hopmeier; Helmut Leist, and Georg J. Ullrich, all of Freiburg im Breisgau, Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,435

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951325

Int. Cl.³ G01N *7/00*

U.S. Cl. 23—232 R **6 Claims**

1. A method for the calibration of a sensing unit used for determining the partial pressure of oxygen in contact with the sensing unit, using a zero-calibration solution in which the partial pressure of the oxygen is maintained at zero by virtue of a reducing agent present in the solution for chemically combining with the oxygen, the method comprising:

adding to the solution an acid-base pH color indicator for indicating that the zero-calibration solution contains unspent reducing agent;

contacting the sensing unit with the zero-calibration solution containing the unspent reducing agent and the acid base pH color indicator;

energizing the sensing unit; and

adjusting the sensing unit until it indicates zero concentration.

4,336,032
PROCESS FOR STABILIZING MIXTURES OF GASOLINE AND METHANOL

Genevieve L. Kupka, Paris, and Mehdi Zar-Ayan, La Frette Sur Seine, both of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Mar. 31, 1980, Ser. No. 135,791

Claims priority, application France, Apr. 6, 1979, 79 08750

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—56 **5 Claims**

1. A process for stabilizing mixtures of gasoline and methanol containing 30% to 60% by volume of methanol and 70% to 40% by volume of gasoline which comprises adding to these mixtures a primary, branched or linear chain, monohydroxylated aliphatic saturated alcohol containing 8 to 15 carbon atoms, or a mixture of such alcohols, the quantity of said alcohol or mixture of alcohols added to the mixture of gasoline and methanol being less than or equal to 10% by volume in relation to the volume of the gasoline/methanol mixture.

4,336,033
FUEL COMPOSITIONS CONTAINING IRON PENTACARBONYL

James B. Hinkamp, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 128,406, Mar. 10, 1980, abandoned. This application Jun. 11, 1981, Ser. No. 272,500

Int. Cl.³ C10L *1/18, 1/30*

U.S. Cl. 44—68 **1 Claim**

1. A lead-free or substantially lead-free hydrocarbon fuel composition comprising a major amount of hydrocarbons boiling in the gasoline boiling range and an amount of iron pentacarbonyl sufficient to provide from at least 0.01 to no greater than 0.22 gram of iron for each gallon of fuel, designed to confer antiknock properties to the fuel composition, but not confer excessive wear in engine parts in an internal combustion engine being operated on said fuel composition.

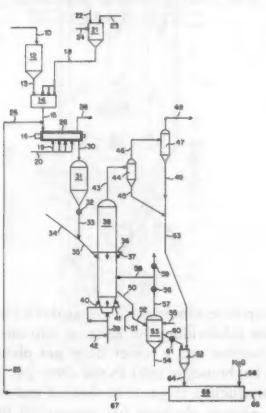
4,336,034
PROCESS FOR THE CATALYTIC GASIFICATION OF COAL

Robert J. Lang, Baytown, and Joanne K. Pabst, Crosby, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 10, 1980, Ser. No. 128,799

Int. Cl.³ C10J *3/00, 3/46*

U.S. Cl. 48—202 **9 Claims**



1. A process for the catalytic steam gasification of coal which comprises:

(a) contacting said coal in the presence of water with potassium sulfate and a calcium compound selected from the group consisting of calcium oxide and calcium hydroxide in a contacting zone to produce a treated coal, wherein said calcium compound is present in a sufficient quantity to activate said potassium sulfate;

(b) passing said treated coal from said contacting zone into a gasification zone; and

(c) gasifying said treated coal with steam at a temperature between about 1200° F. and about 1400° F. in said gasification zone, wherein said potassium sulfate and said calcium compound are introduced into said contacting zone in sufficient amounts to obtain gasification rates substantially

greater than the weighted average of the separate rates that would be obtained if said potassium sulfate or calcium compound were introduced alone into said contacting zone in sufficient amounts to give a cation-to-carbon atomic ratio equal to the sum of the potassium-to-carbon and calcium-to-carbon atomic ratios given by the amount of said potassium and said calcium compound actually introduced into said contacting zone.

4,336,035

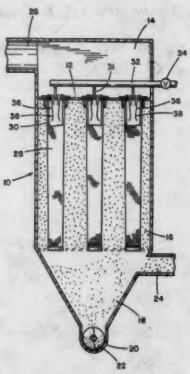
DUST COLLECTOR AND FILTER BAGS THEREFOR

Donovan Evenstad, Olympia, Wash., and Cecil Lander, Pittsburgh, Pa., assignors to Wheelabrator-Frye Inc., Hampton, N.H.

Continuation-in-part of Ser. No. 19,425, Mar. 12, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,431

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—97 **4 Claims**



2. In a top access multiple filter bag device having a housing, a cell plate subdividing the housing into an upper clean gas plenum chamber and a lower dirty gas plenum chamber including a baghouse, in inlet to the dirty gas plenum chamber for the introduction of gas to be cleaned and an outlet from the clean gas plenum chamber for removal of filtered gas, filter bags of circular cross section depending from the cell plate into the dirty gas plenum chamber, circular openings in the cell plate dimensioned to enable the filter bags to extend therethrough for suspension from the cell plate into the baghouse, and means for releasably securing each filter bag to the cell plate, the improvement wherein each filter bag is of decreasing cross section from the upper end portion to the lower end portion so that, as the filter bags are withdrawn from the baghouse through the openings in the cell plate, the clearance between the bags and the cell plate wall defining the corresponding openings increases to ease the removal of the filter bags, a wire cage of circular cross section is dimensioned to be received in fitting relation within each filter bag for support, with corresponding decrease in cross section from the upper end portion to the lower end portion, and means for supporting each cage from the cell plate independently of the filter bags.

4,336,036

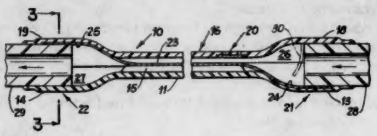
FILTER AND METHOD OF MAKING SAME

Gordon Leeke, Glastonbury, and Timothy Webster, New Britain, both of Conn., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,458

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—159 **6 Claims**



1. A deformable liquid filter with means for manually purging air and gases, comprising

a housing having a pair of flexible walls in spaced apart face to face alignment and sealed together at the edges;

a hydrophilic membrane in said housing with its edges sealed between said sealed edges dividing the space between said pair of walls into an inlet chamber and an outlet chamber;

a longitudinally spaced pair of tubular members extending through opposite ends of said housing each communicating with a different one of said chambers and being sealed between the sealed edges of said membrane and a different one of said pair of walls;

one of said pair of walls having vent means for said inlet chamber and being movable toward said membrane for manually collapsing said inlet chamber urging air and gases to be purged through said vent means; and

the other of said pair of walls having means supporting said membrane and preventing said outlet chamber from collapsing.

4,336,037

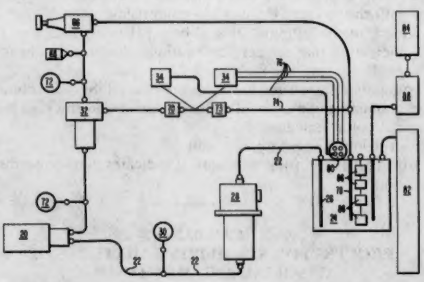
CONTINUOUS DEAERATION SYSTEM FOR A FLUID PUMP SYSTEM

Alexander Goldis, Southfield; Kenneth R. Sellen, Dearborn Heights, and Eugene F. Banka, Livonia, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 19, 1980, Ser. No. 150,732

Int. Cl.³ G01D *15/18*

U.S. Cl. 55—171 **10 Claims**



1. A continuous deaeration system for a fluid pump system comprising:

a housing having an inlet port through which aerated fluid flows into the housing from a pump;

an outlet port in the housing through which aerated fluid flows for recirculation in the fluid pump system;

a deaerated fluid outlet port in the housing through which virtually contaminant and air-free fluid flows to an ink jet printer apparatus;

a filter element within the housing, the filter element having

a plurality of appropriately sized interstices for continuously separating air and other contaminants from the flow of aerated fluid received from the inlet port of the housing;

a reservoir within the housing for collecting virtually contaminant free deaerated fluid and air separated from the aerated fluid, the reservoir transmitting the collected fluid mixture to the outlet port of the housing and transmitting contaminant free deaerated fluid to the deaerated fluid outlet port of the housing;

said housing comprising an upper portion defining the reservoir, the upper portion including the outlet port and the deaerated fluid outlet port;

said housing comprising a lower portion having a cavity containing the filter element, the lower portion including the inlet port through which aerated fluid flows from a pump; and

means for joining the upper portion to the lower portion for preventing leakage of fluid out of, and introduction of air into, the housing at the junction of the upper and lower portions.

4,336,038

FILTER MAT

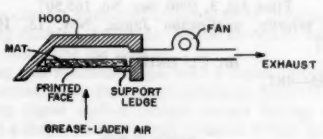
Wolfram Schultheiss, Birkenau, and Harald Hoffmann, Dossenheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Hohnerweg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 19,965, Mar. 12, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,175

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 7809170[U]

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—274 **6 Claims**



1. A fibrous filter mat in combination with a filter hood, the mat being printed on only its intake surface with a mixture of at least two dye components which are insoluble in one another, one of the dye components being oil soluble and another being oil-insoluble, the dye components contrasting in color from each other and from the fiber.

4,336,039

GEOTHERMAL TURBINE

John S. Sohre, One Lakeview Cir., Beaver Lake, Ware, Mass. 01082

Filed Oct. 13, 1977, Ser. No. 841,652

Int. Cl.³ B01D *51/08*

U.S. Cl. 55—277 **15 Claims**

1. A geothermal energy turbine comprising:

a radial outflow rotor having contoured opposed walls, said rotor being mounted for rotation about an axis;

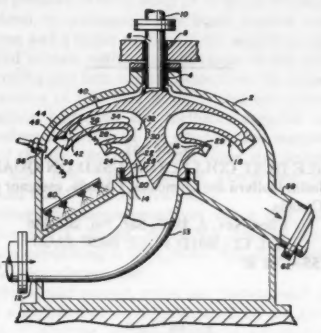
means for delivering geothermal fluid to said rotor in a direction of absolute velocity substantially radial with respect to said axis;

a plurality of reaction nozzles between said opposed walls, said nozzles being located in a row around the periphery of said radial outflow rotor and being positioned to discharge fluids substantially tangentially of the rotor periphery; and

curved quide vanes extending inwardly from said nozzles toward said delivering means whereby the fluid will be restrained from rotation with the rotor.

3. A geothermal fluid turbine rotor including:

two rotor wheels, one for steam and one for water; each wheel having a row of supersonic nozzles on its periphery; and



a separator in the rotor for diverting water into the water wheel and steam to the steam wheel.

4,336,040

DUST SEPARATOR

Johann Haberl, Skärholmen, Sweden, assignor to Dustcontrol AB, Norsborg, Sweden

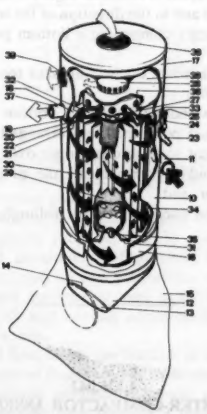
PCT No. PCT/SE79/00126, § 371 Date Jan. 30, 1981, § 102(e) Date Jan. 30, 1981, PCT Pub. No. WO80/02651, PCT Pub. Date Dec. 11, 1980

PCT Filed May 31, 1979, Ser. No. 232,263

Claims priority, application Sweden, Apr. 10, 1978, 7803978

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—304 **3 Claims**



1. A dust separator, comprising a cyclone apparatus having an inlet for gaseous fluid with dust entrained therein and an outlet, a fan having an inlet communicating with the cyclone outlet and an outlet for cleaned gaseous fluid at the pressure side thereof, a drive motor connected to the fan, a filter projecting freely coaxially into the cyclone apparatus to form a filtering connection between the interior of the cyclone apparatus and the suction side of the fan and including a perforated tubular core and a pleated outer cover of filter material surrounding the core and clamped between the ends thereof to said fan, the pleats of said cover extending axially along the core and being fixed thereto at the inner folding edges thereof

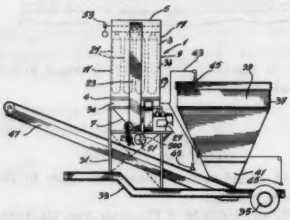
while the outer folding edges are free, said fan and the drive motor thereof forming together with the filter a separate unit, and means resiliently connecting said unit to the cyclone apparatus.

4,336,041

MOBILE DUST COLLECTOR USED ON QUARRIES

Marcel Jolin, Dollard des Ormeaux, Canada, assignor to Dustell Ltee, Canada

Filed Nov. 3, 1980, Ser. No. 203,546
Int. Cl.[3] B01D *46/02;* B03C *23/28*
U.S. Cl. 55—341 R 24 Claims



1. A combination consisting of a mobile dust collector and mobile equipment mounted on a common platform, said mobile equipment comprising equipment which generates dust in the operation thereof such as, for example, surge bins and crushers;

said equipment is mounted at one end of said platform and said dust collector is mounted adjacent said equipment on said platform and in the direction of the other end thereof;

said dust collector comprising a bottom portion and a top portion;

means for detachably connecting said top portion to said bottom portion;

duct means extending from said bottom portion to said equipment and positioned and arranged with respect to said equipment so as to capture air over and around said equipment and to communicate the air to the interior of said collector, and

wheel means on said platform for rollingly supporting said platform.

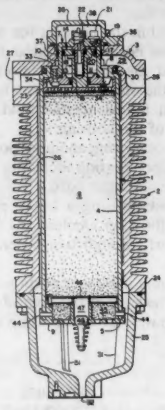
4,336,042

CANISTER-COMPACTOR ASSEMBLY

Virgil L. Frantz, and Lanier Frantz, both of Salem, Va., assignors to Graham-White Sales Corporation, Salem, Va.

Filed Oct. 14, 1980, Ser. No. 196,547
Int. Cl.[3] B01D *53/26*
U.S. Cl. 55—387 10 Claims

1. The combination with a compressed gas filter unit having a housing and alternating between filtering and regenerating cycles, of a canister-compactor assembly insertible and removable as a unit in and from said housing, said assembly comprising a canister for containing a particulate desiccant, and a pneumatic compactor mounted in an outlet end of said canister, said compactor including piston means actuated by compressed gas for applying a compacting force to said desiccant and valve means for charging with and discharge of said actuating compressed gas for respectively applying said compacting force to and relieving said desiccant of a previously applied force.

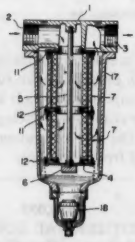


4,336,043

FILTER UNIT CONSTRUCTION FOR A FILTRATION ASSEMBLY

Masaru Aonuma, and Kazuyuki Nanaumi, both of Suzaka, Japan, assignors to Orion Machinery Company Limited, Nagano, Japan

Filed Jul. 3, 1980, Ser. No. 165,507
Claims priority, application Japan, Nov. 13, 1979, 54-158041[U]
Int. Cl.[3] B01D *50/00*
U.S. Cl. 55—483 7 Claims



1. A filtration assembly for filtering fluid media, particularly compressed air, comprising: housing means defining a fluid inlet and a fluid outlet; a filter unit arranged within said housing means to have fluid media flowing between said inlet and said outlet pass therethrough; said filter unit comprising a plurality of generally cylindrical filter elements each having an upper end and a lower end, said filter elements being joined together with the upper end and lower end of each adjacent filter element juxtaposed to form said filter unit as a generally hollow cylindrical body; seal means mounting said filter unit within said housing so that substantially all fluid media flowing between said fluid inlet and said fluid outlet passes through said filter unit; connecting means located at said juxtaposed upper and lower ends of said filter elements operatively mounting said filter elements together; said connecting means including a head cover having a central aperture mounted at the upper end of each filter element and a bottom cover having a central aperture mounted at the lower end of each filter element, with

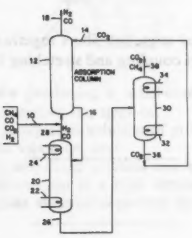
said head covers and bottom covers being positioned between adjacent filter elements to join said filter elements together; said connecting means including a closure for the lower bottom cover and groove passage means formed in each of said head covers and bottom covers, said groove passage means defining a flow path for liquid impurities to drain from said filter elements and to pass between adjacent filter elements.

4,336,044

PROCESS FOR SEPARATING COAL SYNTHESIZED METHANE FROM UNREACTED INTERMEDIATE AND CONTAMINANT GASES

Ray E. Barker, Knoxville; Charles D. Scott, and Allen D. Ryon, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 27, 1980, Ser. No. 200,799
Int. Cl.³ F25J 3/02
U.S. Cl. 62—17 **6 Claims**



1. A process for separating components of a synthesized gas containing methane, hydrogen, carbon monoxide and carbon dioxide, comprising the steps of:

contacting said synthesized gas with a liquid carbon dioxide scrub stream in an absorption column to form (1) a solute-carrying liquid carbon dioxide stream having dissolved therein a major portion of the methane in said synthesized gas, and (2) a gas stream comprising major portions of the hydrogen and carbon monoxide in said synthesized gas;

fractionating said solute-carrying stream in a first fractionating column to form (1) a first fractionator bottoms comprising liquid carbon dioxide having dissolved therein the major portion of the methane in said solute-carrying stream, and (2) a recycle gas comprising methane, carbon dioxide, and major portions of the residual hydrogen and carbon monoxide in said solute-carrying stream;

recycling said recycle gas into contact with said scrub stream in said absorption column;

fractionating said first fractionator bottoms in a second fractionation column to form (1) a second fractionator overhead gas stream rich in methane and (2) a second fractionator bottoms comprising liquid carbon dioxide substantially free of methane; and

recycling said liquid carbon dioxide of said second fractionator bottoms to said scrub stream introduced into said absorption column.

4,336,045

ACETYLENE REMOVAL IN ETHYLENE AND HYDROGEN SEPARATION AND RECOVERY PROCESS

Theodore F. Fisher, and John B. Saunders, both of Tonawanda, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,725
Int. Cl.³ F23J 3/02, 3/06, 3/08
U.S. Cl. 62—17 **16 Claims**

1. An improved process for the separation and recovery of an ethylene-enriched liquid and hydrogen product gas from a hydrocarbon feed mixture containing said ethylene and hydrogen, together at least with acetylene and methane, comprising:

(a) cooling said hydrocarbon feed mixture, at a superatmospheric pressure of from about 25 to about 40 atmospheres (absolute), to condense a first liquid fraction containing ethylene and a major portion of the acetylene content of the feed mixture without solidification of said acetylene;

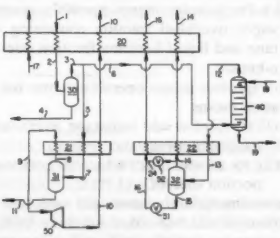
(b) separating said first liquid fraction from the uncondensed gas portion of said feed mixture, said uncondensed gas containing hydrogen and methane, together with the uncondensed portion of the ethylene and acetylene content of the feed mixture at said super atmospheric pressure, said first liquid fraction comprising ethylene-enriched liquid to be recovered;

(c) dividing said uncondensed gas into a first, major gas fraction and a second, minor gas fraction, said major fraction comprising at least about 75% of the molar flow of said uncondensed gas;

(d) scrubbing said second, minor gas fraction with an essentially acetylene-free liquid selected from the group consisting of ethylene, ethane, propylene, propane and mixtures thereof to remove a substantial portion of the acetylene content of said second gas fraction;

(e) cooling the thus acetylene-depleted second, minor gas fraction to condense residual hydrocarbons therefrom, thus forming a second liquid fraction;

(f) separating said second liquid fraction from the uncondensed, further cooled, essentially hydrogen-containing second, minor gas fraction at said relatively high, super-atmospheric pressure;



(g) warming said hydrogen-containing second, minor gas fraction, the warmed second gas fraction comprising hydrogen product gas;

(h) throttling said second liquid fraction to a relatively low super-atmospheric pressure, thereby cooling said liquid fraction and developing refrigeration for cooling said acetylene-depleted, second gas fraction in step (e);

(i) warming said throttled second liquid fraction by heat exchange with said cooling acetylene-depleted, second, minor gas fraction,

(j) cooling said first, major gas fraction at said super-atmospheric pressure of from about 25 to 40 atmospheres (absolute) to condense ethylene and most of the acetylene content therefrom, thus forming a third liquid fraction without solidification of the condensed acetylene;

(k) separating said third liquid fraction from the uncondensed, further cooled, first major gas fraction at said relatively high super-atmospheric pressure, said third liquid fraction being suitable for use as a portion of the ethylene-enriched liquid to be recovered;

(l) warming said first, major uncondensed gas fraction;

(m) expanding said warmed, first major gas fraction from relatively high to relatively low super-atmospheric pressure, thereby cooling said gas fraction and developing additional refrigeration for cooling gas fractions,

whereby acetylene solidification is effectively avoided during ethylene and hydrogen separation and recovery without the

necessity for treating a major portion of the uncondensed gas for removal of acetylene therefrom.

4,336,046

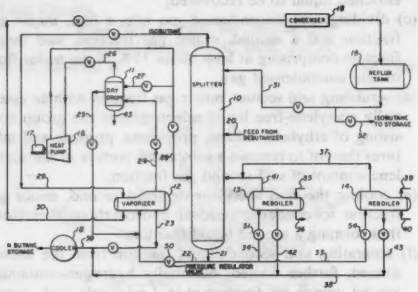
C_4 SEPARATION PROCESS

Kenneth R. Schorre, Spring; James O. Nye, Friendswood; Dennie W. Dixon, Bellaire, and Carl Nepute, Friendswood, all of Tex., assignors to Tenneco Oil Company, Houston and Nye Engineering, Incorporated, Friendswood, both of, Tex.

Filed Sep. 12, 1980, Ser. No. 186,515

Int. Cl.[3] F25J *3/02*

U.S. Cl. 62—28 18 Claims



1. An apparatus for separating a feed stream containing predominately n-butane and isobutane comprising:

(a) a fractionator means operably connected to provide a vapor overhead fraction containing substantially isobutane and liquid bottoms fraction containing substantially n-butane,

(b) vaporizer means operably connected with said fractionation means

(1) to receive said isobutane overheads, for heating said vaporizer means and

(2) to receive said n-butane bottoms for vaporizing a portion thereof,

(c) means operably connected with said vaporizer means to receive said vaporized n-butane from said vaporizer for removing liquid in said n-butane vapor and means, operably connected therewith, for heating said liquid-free n-butane vapor to a temperature at least sufficient to maintain said n-butane vapor in the vapor phase without the formation of a liquid phase in,

(d) a compressor means operably connected with said means for heating n-butane vapor for compressing said n-butane whereby the temperature of said n-butane vapor is increased to a temperature sufficient to provide boil up in said fractionator means, said compressor being operably connected to said fractionator means for returning said heated and compressed n-butane to said fractionator.

4,336,047

METHOD FOR FABRICATING SINGLE-MODE AND MULTIMODE FIBER OPTIC ACCESS COUPLERS

Theodore G. Pavlopoulos, and Daniel E. Altman, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1981, Ser. No. 222,113

Int. Cl.[3] C03B *23/20;* G02B *5/14*

U.S. Cl. 65—3.31 10 Claims

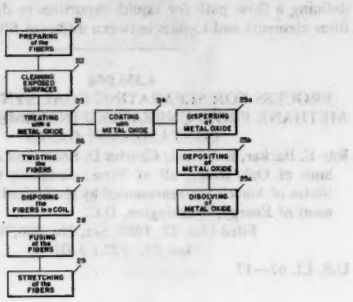
1. A method of fabricating an access coupling between at least two optical fibers each having a core and a cladding, comprising:

preparing the fibers to control the surface tension of their exposed surfaces;

placing the fibers in a side-by-side relationship;

twisting the fibers together to assume a mutually helical relationship;

disposing the twisted fibers in a twister coil in an inert gas at a predetermined pressure;


PREPARING of the FIBERS
CLEANING EXPOSED SURFACES
TREATING with a METAL OXIDE
COATING with METAL OXIDE
DISPERSING a METAL OXIDE
TWISTING the FIBERS
DEPOSITING METAL OXIDE
DISPOSING the FIBERS in a COIL
DISSOLVING a METAL OXIDE
FUSING of the FIBERS
STRETCHING of the FIBERS

fusing the twisted stretched fibers together in a vacuum to effect a desired coupling and stretching the twisted fibers.

4,336,048

METHOD OF PRODUCING DOPED QUARTZ GLASS

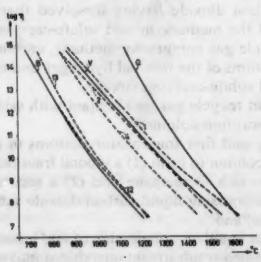
Gerardus H. A. M. van der Steen, and Eddy F. C. Van Hove, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1980, Ser. No. 147,893

Claims priority, application Netherlands, May 16, 1979, 7903842

Int. Cl.[3] C03C *3/06;* C03B *20/00*

U.S. Cl. 65—18.4 3 Claims



1. A method of producing doped quartz glass having a lower viscosity than that of pure quartz glass comprising: forming a concentrate of quartz powder and at least one dopant by sintering or premelting, melting a mixture of quartz powder and said concentrate in an amount containing from 0.035 to 3 mol. % of dopants (computed on the basis of the oxides) in the produced doped quartz glass, and cooling the melt, wherein said quartz powder has a purity of at least 99.99 mol. % as a starting material.

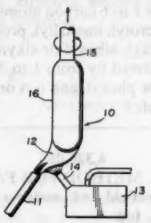
2. A method according to claim 1, wherein said concentrate contains an oxide of at least one alkali metal as a dopant or alkaline earth metal as a dopant.

4,336,049

METHOD FOR PRODUCING MULTI-COMPONENT GLASS FIBER PREFORM

Shiro Takahashi, Mito; Kazuo Sanada, Chiba; Koichi Inada, and Osamu Fukuda, both of Sakura, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Fujikura Cable Works, Ltd., both of Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,856
Claims priority, application Japan, Sep. 26, 1979, 54-123677; Jul. 4, 1980, 55-91292; Jul. 5, 1980, 55-91930
Int. Cl.³ C03B *19/06, 37/07*
U.S. Cl. 65—3.12 11 Claims



1. A method for producing a multi-component glass fiber preform which comprises the steps of:

(1) nebulizing an aqueous solution of at least one metal salt by supersonic vibration, and

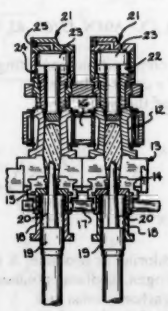
(2) reacting the nebulized solution and a gaseous glass raw material with oxygen at a high temperature to produce particulate glass material deposited on a substrate.

4,336,050

METHOD FOR MANUFACTURING GLASS BOTTLES

John D. Northup, 2460 Underhill Rd., Toledo, Ohio 43615, assignor to John D. Northrup, Jr.; Ruth Northup; Nancy Northup Lehrkind and Mary Northup

Continuation-in-part of Ser. No. 112,845, Jan. 17, 1980, abandoned. This application Jul. 28, 1980, Ser. No. 173,078
Int. Cl.³ C03B *11/10*
U.S. Cl. 65—82 4 Claims



1. The method of forming a glass parison from which glass containers are formed, in a machine having at least one blank mold, the mold defining a cavity and having a cavity plunger and a pressing plunger adjacent the cavity which method comprises the steps of:

introducing a premeasured gob of molten glass into the blank mold cavity, inserting the cavity plunger into the gob to form a parison cavity the volume of which is at least 20% of the volume of the blank mold cavity;

retaining the cavity plunger in the parison cavity and applying pressure separate from the cavity plunger throughout the gob urging molten glass into conformity with the mold, wherein the separate pressure is applied by moving the pressing plunger against the gob.

4,336,051

PROCESS FOR THE PRODUCTION OF A SOIL IMPROVING COMPOSITION

Juan U. Marquez, Alabama No. 200 Col., Napoles Mexico 18, D. F., Mexico

Filed Dec. 23, 1980, Ser. No. 219,582
Claims priority, application Mexico, Mar. 10, 1980, 8701
Int. Cl.³ C05F *11/08*
U.S. Cl. 71—6 8 Claims

1. A process for the production of a soil improving composition comprising:

(a) mixing 23–27% water, 5–8% gelidium type algae, 5–8% diastatic malt type C, 6–9% sucrose, 6–9% molasses, and 5–8% magnesium sulfate at a temperature of about 70° to 80° C. for about 24 hours;

(b) recirculating the mixture for about 48 hours while mixing and maintaining it in the same temperature range;

(c) adding 6–9% ammonium sulfate, 12–18% 1,2,3,-propanetriol, 6–10% sodium tetradecyl sulfate—industrial grade, and 6–10% sodium tetradecyl sulfate—medicinal grade, while maintaining the mixing, recirculation, and temperature range for a period of time sufficient to homogenize the ingredients; and

(d) permitting the homogenized mixture to stand, open to the atmosphere, for from 6 to 10 days, while maintaining it at a temperature of from 50° to 55° C.; until the composition of this invention is formed; all percentages being by weight.

4,336,052

METHOD OF USING CORN SYRUP FOR REDUCING PHYTOTOXICITY OF UREA APPLIED TO PLANTS FOR FOLIAR FERTILIZATION

Tsong M. Chen, Piscataway; El-Ahmadi I. Heiba, Princeton, both of N.J., and William W. John, Modesto, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,644
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 9 Claims

1. A method for reducing phytotoxicity of urea applied as a foliar fertilizer to soybean plants comprising applying to the leaves of said plants an aqueous composition comprising an amount of urea effective as a foliar fertilizer and corn syrup in an amount effective to reduce the leaf damage observed with foliar application of urea in the absence of the corn syrup.

4,336,053

FERTILIZER SOLUTIONS STABILIZED WITH INORGANIC ACIDS

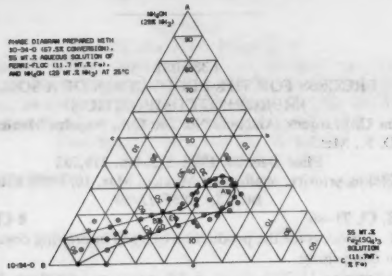
Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 10, 1980, Ser. No. 158,180
Int. Cl.³ C05B *11/08, 11/10*
U.S. Cl. 71—40 15 Claims

1. A process for preparing a stable liquid fertilizer solution which comprises:

adding to a basic solution having a pH greater than 7.0 and comprising iron, ammonia, and phosphorus, wherein at least a portion of the phosphorus is in the form of a polyphosphate, the molar ratio of phosphorus in the form of

polyphosphate to iron is at least about 2:1, and the molar ratio of ammonia to iron is at least about 4:1, an amount of



an inorganic acid sufficient to produce a non-gelled acidic solution having a pH within the range of about 5.5 to 7.0.

4,336,054

METHOD OF INHIBITING ALGAE

Albert Sjoerdsma, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 95,347, Nov. 19, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,569

Int. Cl.³ A01N *37/02, 37/06*

U.S. Cl. 71—67 **5 Claims**

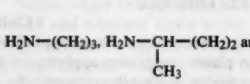
1. A method of inhibiting the growth of algae which comprises contacting said algae with an algal inhibiting amount of an α-substituted amino acid having the formula

wherein

R_1 is carboxy;

Y is selected from the group consisting of CH_2F, CHF_2, CF_3 and C≡CH;

Z is selected from the group consisting of



and

the salts and individual optical isomers thereof.

4,336,055

AGENTS FOR REGULATING PLANT GROWTH CONTAINING TRIAZOLYL GLYCOL ETHERS, AND THE USE THEREOF

Bernd Zeeh; Ernst Buschmann, both of Ludwigshafen, and Johann Jung, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

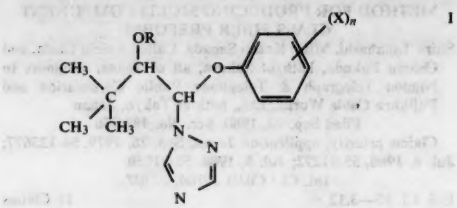
Filed Jun. 2, 1980, Ser. No. 155,749

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925687

Int. Cl.³ A01N *43/64;* C07D *249/10*

U.S. Cl. 71—76 **2 Claims**

1. A process for reducing the growth height of plants which comprises applying to the plants or to soil containing the seeds of the plants an effective amount of a triazolyl glycol ether of the formula



I

wherein R is alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, allyl, crotyl, methallyl, propargyl, or butyn-2-yl, which alkyl, cycloalkyl, alkenyl or alkynyl groups are unsubstituted or are substituted by from 1 to 3 halogen atoms, X is hydrogen, halogen or phenyl, and n is one of the integers 1, 2 or 3, or a salt thereof.

4,336,056

HERBICIDAL METHOD FOR FALLOW LAND

Benny J. Eaton, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 31, 1980, Ser. No. 135,753

Int. Cl.³ A01N *43/00*

U.S. Cl. 71—88 **2 Claims**

1. A method for killing and controlling the growth of unwanted vegetation on follow wheatland between the time of harvesting the wheat crop and the time of the next planting of winter wheat which method comprises applying to the locus where vegetative control is desired a herbicidally-effective amount of a 1,1-dimethyl-3-(5-tert-butyl-3-isoxazolyl)urea.

4,336,057

HERBICIDES

Hermann Bieringer, Eppstein, and Reinhard Handte, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 26,876, Apr. 4, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,309

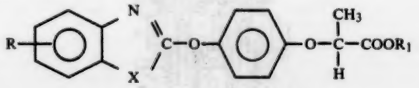
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815287

Int. Cl.³ A01N *43/00, 43/02*

U.S. Cl. 71—88 **3 Claims**

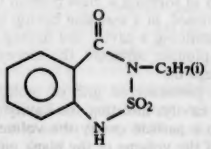
1. A herbicidal composition consisting essentially of an effective amount of a combination of

(A) a compound of the formula



in which R is chlorine or bromine, X is oxygen or sulfur, and R_1 is hydrogen, sodium, potassium, ammonium or alkyl of 1 to 4 carbon atoms; and

(B) the compound of the formula



wherein the proportion by weight of components A and B is in the range of 1:2 to 1.2:5.

4,336,058

2-METHYL-4-(CHLOROACETAMIDO)METHYL-4-(2-CHLOROPHENYL)-1,3-DIOXANE HERBICIDE ANTIDOTE

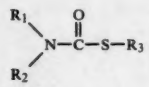
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 6, 1981, Ser. No. 232,069
Int. Cl.[3] A01N *43/00*; C07D *319/04*
U.S. Cl. 71—88 15 Claims

1. 2-Methyl-4-(chloroacetamido)methyl-4-(2-chlorophenyl)-1,3-dioxane.

3. A composition comprising:

(a) an herbicidally effective amount of a thiocarbamate compound of the formula:



in which

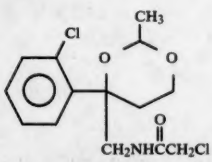
R_1 is alkyl having 1–6 carbon atoms, inclusive;

R_2 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; and cyclohexyl; or

R_1 and R_2 form indistinguishable parts of a single alkylene ring having 4–10 carbon atoms, inclusive; and

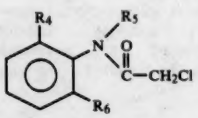
R_3 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; haloalkyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkyl has 1–6 carbon atoms, inclusive; alkenyl having 2–6 carbon atoms, inclusive; halo alkeny wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkenyl has 2–6 carbon atoms, inclusive; benzyl; and halo-substituted benzyl, wherein halo is selected from the group consisting of chlorine, bromine and iodine; and

(b) an non-phytotoxic antidotally effective amount of a compound of the formula



6. A composition comprising

(a) an herbicidally effective amount of an acetanilide compound of the formula

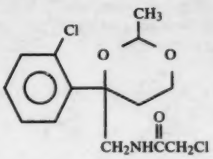


in which

R_4 and R_6 are independently selected from the group consisting of hydrogen; and alkyl having 1–6 carbon atoms, inclusive; and

R_5 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; alkoxy having 1–8 carbon atoms, inclusive and carbethoxyalkyl wherein the alkyl group has 1–4 carbon atoms, inclusive; and

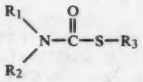
(b) an non-phytotoxic antidotally effective amount of a compound of the formula



10. A method of establishing herbicidal selectivity comprising:

applying to the locus where control is desired a composition comprising:

(a) an herbicidally effective amount of a thiocarbamate compound of the formula:



in which

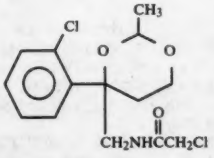
R_1 is alkyl having 1–6 carbon atoms, inclusive;

R_2 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; and cyclohexyl; or

R_1 and R_2 form indistinguishable parts of a single alkylene ring having 4–10 carbon atoms, inclusive; and

R_3 is selected from the group consisting of alkyl having 1–6 cabon atoms, inclusive; haloalkyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkyl has 1–6 carbon atoms, inclusive; alkenyl having 2–6 carbon atoms, inclusive; halo alkeny wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkenyl has 2–6 carbon atoms, inclusive; benzyl; and halo-substituted benzyl, wherein halo is selected from the group consisting of chlorine, bromine and iodine; and

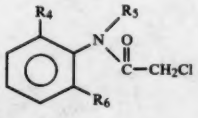
(b) an non-phytotoxic antidotally effective amount of a compound of the formula



13. A method of establishing herbicidal selectivity comprising:

applying to the locus where control is desired a composition comprising:

(a) an herbicidally effective amount of an acetanilide compound of the formula



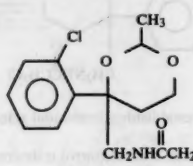
in which

R_4 and R_6 are independently selected from the group consisting of hydrogen; and alkyl having 1–6 carbon atoms, inclusive; and

R_5 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; alkoxy having 1–8 carbon atoms,

inclusive and carbethoxyalkyl wherein the alkyl group has 1–4 carbon atoms, inclusive; and

(b) an non-phytotoxic antidotally effective amount of a compound of the formula



4,336,059

HERBICIDAL AND PLANT-GROWTH-REGULATING N-(HETEROCYCLYL)-METHYLACETANILIDE

Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

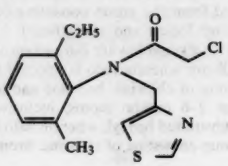
Continuation of Ser. No. 10,877, Feb. 9, 1979, Pat. No. 4,221,584. This application Mar. 27, 1980, Ser. No. 134,378

The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.

Int. Cl.³ A01N *43/78;* **C07D** *277/28*

U.S. Cl. 71—90 **5 Claims**

1. The compound of the formula



4,336,060

N-SUBSTITUTED BENZOTHIAZOLINES AND BENZOXAZOLINES AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

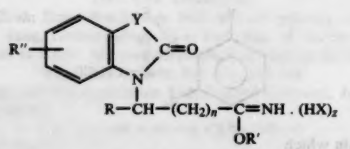
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 926,470, Jul. 20, 1978, Pat. No. 4,228,292. This application Apr. 10, 1980, Ser. No. 139,063

Int. Cl.³ A01N *43/76, 43/78*

U.S. Cl. 71—90 **13 Claims**

1. A method of regulating the growth of desirable plants which comprises applying to the plant locus a plant growth regulating effective amount of a compound having the formula



wherein R is hydrogen or lower alkyl; R′ is lower alkyl; R″ is hydrogen, lower alkyl or halogen; Y is oxygen or sulfur; X is an anionic moiety of a strong acid, n is an integer from zero to two, inclusive and z is zero or one.

4,336,061

HERBICIDAL AZOLYL CHLOROACETANILIDES, COMPOSITIONS AND METHOD OF USE

Karl Eicken, Wachenheim; Wolfgang Rohr, Mannheim; Norbert Goetz, Worms, and Bruno Wuerzer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/EP79/00076, § 371 Date Sep. 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00701, PCT Pub. Date Apr. 17, 1980

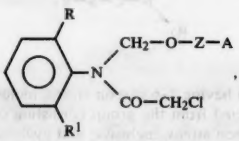
PCT Filed Apr. 10, 1979, Ser. No. 196,734

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843869

Int. Cl.³ A01N *43/50, 43/56, 43/64;* **C07D** *231/12, 233/61, 249/04, 249/08*

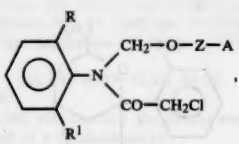
U.S. Cl. 71—92 **6 Claims**

1. An acetanilide of the formula



where R and R^1 are identical or different and each denotes alkyl of 1 to 4 carbon atoms, Z denotes methylene, or ethylene which is unsubstituted or substituted by 1 or 2 methyl groups, and A denotes pyrazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, methyl or methoxy, triazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, methyl or methoxy, or imidazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, methyl or methoxy.

6. A process for controlling unwanted plant growth, which comprises treating the plants or the soil with a herbicidally effective amount of an acetanilide of the formula



where R and R^1 are identical or different and each denotes alkyl of 1 to 4 carbon atoms, Z denotes methylene, or ethylene which is unsubstituted or substituted by 1 or 2 methyl groups, and A denotes pyrazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, metnyl or methoxy, triazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, methyl or methoxy, or imidazole which is linked via a ring nitrogen atom and is unsubstituted or mono- or disubstituted by halogen, methyl or methoxy.

4,336,062

HERBICIDAL CYCLOHEXENONE DERIVATIVES

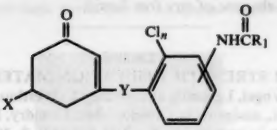
Raymond A. Felix, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 834,090, Sep. 19, 1977, abandoned. This application May 16, 1978, Ser. No. 906,495

Int. Cl.³ A01N *31/00, 37/00, 37/44, 37/18, 47/30;* **C07C** *83/10, 155/03, 149/40, 125/06, 103/19, 103/127, 103/133, 127/19*

U.S. Cl. 71—98 **69 Claims**

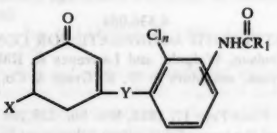
1. A compound having the formula



in which X is $(H)_2$ or $(CH_3)_2$, Y is oxygen or sulfur; R_1 is alkyl, lower alkenyl, cyclopropyl, lower alkoxy, thio-lower alkyl or

R_2 and R_3 are independently hydrogen, lower alkyl, lower alkenyl or lower alkoxy, and n is 0 or 1, provided that when n is 0 and when the aminocarbonyl group and the ether or sulfide linkage are in the para position with respect to each other, R_1 is cyclopropyl or 1,1-dimethylbutyl.

57. A method of controlling undesirable vegetation comprising applying to the vegetation or the locus thereof an herbicidally effective amount of a compound having the formula



in which X is $(H)_2$ or $(CH_3)_2$; Y is oxygen or sulfur; R_1 is alkyl, lower alkenyl, cyclopropyl, lower alkoxy, thio-lower alkyl or

R_2 and R_3 are independently hydrogen, lower alkyl, lower alkenyl, or lower alkoxy, n is 0 or 1 provided that when n is 0 and when the aminocarbonyl group and the ether or sulfide linkage are in the para position with respect to each other, R_1 is cyclopropyl, or 1,1-dimethylbutyl.

4,336,063

METHOD AND APPARATUS FOR THE GASEOUS REDUCTION OF IRON ORE TO SPONGE IRON

Carlos Guzman-Bofill, and Carlos Dominguez-Ahedo, both of Garza Garcia, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Sep. 29, 1980, Ser. No. 191,941
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—35 **10 Claims**

1. Apparatus for reducing particulate metal ores to sponge metal comprising a vertical shaft moving bed reactor having a reduction zone wherein said metal ore is reduced by a hot reducing gas largely composed of carbon monoxide and hydrogen,

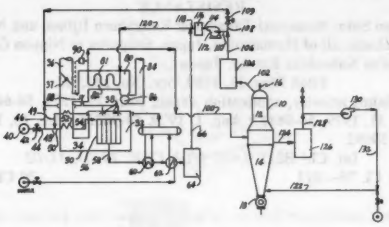
gas inlet and outlet means located at opposite ends of said reduction zone,

an external conduit connecting said inlet and outlet means and including a cooler and a heating unit having a first burner means,

a catalytic reformer wherein make-up reducing gas is produced by the reforming of hydrocarbons,

second burner means which provides the heat for said reforming by the combustion of a fossil fuel and produces hot flue gases,

means for transferring said hot flue gases to said heating unit, whereby the heat content of said hot flue gases is utilized for heating the gas circulating through said conduit, and



by-pass means adapted to vent said hot flue gases from said reformer before reaching said heater unit when the latter is shut down whereby the reformer can continue to function.

4,336,064

METHOD OF IMPROVING THE PERFORMANCE OF SUBMERGED OXYGEN INJECTORS

Guy Savard, Westmount, and Robert G. H. Lee, Montreal, Canada, assignors to Canadian Liquid Air Ltd., Montreal,both of, Canada

Filed Oct. 6, 1980, Ser. No. 194,623
Int. Cl.³ C21C *5/34*
U.S. Cl. 75—60 **5 Claims**

1. In a method of injecting oxygen into a bath of molten metal, in the refining of said metal, in which the oxygen is injected in a stream into the molten metal from below the upper surface thereof and in which the injected oxygen is surrounded by a simultaneously injected stream of protective fluid, the improvement wherein the velocity of the stream of protective fluid is about 0.5 to 1.5 times the velocity of the oxygen stream at the point of injection, whereby turbulence between the streams is substantially minimized.

4,336,065

METHOD FOR THE MANUFACTURE OF A COMPOSITE MATERIAL BY POWDER METALLURGY

Hans Bergmann, Bruchbergweg 22, 3392 Clausthal-Zellerfeld; Rüdiger Bormann, Bühlstr. 2; Herbert C. Freyhardt, Auf der Wessel 65, both of 3400 Göttingen, and Barry L. Mordike, Hüttenweg 1B, 3392 Clausthal-Zellerfeld, all of Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,723
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909290
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—200 **9 Claims**

1. A method for manufacturing a composite material by powder metallurgy, comprising the steps of:

(a) forming a mixture of:

(1) a starting material comprised of at least one body-centered cubic metal powder component, said starting material being contaminated within or on its surface with oxygen or an oxygen compound; and

(2) at least one additive component which is an unoxidized metal having in powder form or as an alloy a greater binding enthalpy for oxygen than said starting material; and

(b) processing said mixture to form a composite wherein the presence of said additive component results in the binding therewith by internal solid-state reduction of the oxygen contaminating said starting material; and

(c) deforming said composite in at least one dimension.

4,336,066

METHOD FOR MANUFACTURING COMPONENTS FOR MAGNETIC HEADS OF INCREASED ABRASION RESISTANCE

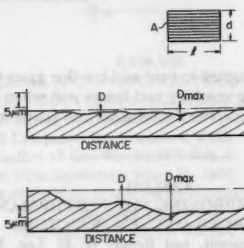
Takeo Sata; Masayuki Takamura; Kenzaburo Iijima, and Norio Fukuda, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 23, 1980, Ser. No. 152,782

Claims priority, application Japan, May 25, 1979, 54-64819; Jul. 31, 1979, 54-98317; Aug. 1, 1979, 54-98555; Dec. 10, 1979, 54-159092

Int. Cl.[3] B22F *1/00, 1/02;* C22C *19/03, 33/02*

U.S. Cl. 75—211 20 Claims



1. A method for manufacturing components for magnetic heads comprising

preparing powder material of a permalloy alloy composition,

compacting said powder material into a compressed block,

sintering said compressed block at a temperature of at least 900° C. for at least one hour within a vacuum, hydrogen or inert atmosphere to form a sintered block,

rolling said sintered block into a lamina, and forming said components from said lamina, thereby substantially raising abrasion resistance without lowering magnetic properties of said components.

12. A method as claimed in claim 1 in which said preparing includes

adding to a base material of a permalloy composition at least one easily oxidizable element, and

powdering by means of atomization.

4,336,067

HOT MELT CHROMOGENIC COATING COMPOSITION

Dale R. Shackle, and Ainslie T. Young, Jr., both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 830,987, Sep. 6, 1977, abandoned. This application Mar. 27, 1980, Ser. No. 134,406

The portion of the term of this patent subsequent to Dec. 20, 1994, has been disclaimed.

Int. Cl.[3] B41M *5/22*

U.S. Cl. 106—21 7 Claims

1. A hot melt chromogenic coating composition for the preparation of pressure-sensitive carbonless record sheets, said hot melt chromogenic coating composition being non-aqueous and solvent-free, said hot melt chromogenic coating composition additionally being water insoluble and having a melting point of from about 60° C. to about 140° C., said coating composition comprising from about 15% to 85% by weight of a chromogenic material, said chromogenic material being a meltable color developer of the acidic electron accepting type, said chromogenic material being selected from the group consisting of 3,5 di-tert-butyl salicylic acid, phenol resins of the novolak type, zinc salts of 3,5 di-tert-butyl salicylic acid and zinc modified novolak resins and mixtures thereof, and from about 15% to about 85% by weight of a rheology modifying material said coating composition, when set, being characterized by the absence of any free liquid.

4,336,068

HIGH STRENGTH INSULATION MATERIALS

Edward G. Vogel, Lebanon, and Rodney C. Westlund, Lancaster, both of Pa., assignors to Lebanon Steel Foundry, Lebanon, Pa.

Continuation-in-part of Ser. No. 921,595, Jul. 3, 1978, which is a continuation-in-part of Ser. No. 782,950, Mar. 30, 1977, abandoned, which is a division of Ser. No. 851,407, Nov. 14, 1977, Pat. No. 4,138,268. This application Sep. 10, 1980, Ser. No. 185,745

Int. Cl.[3] C04B *19/04*

U.S. Cl. 106—84 10 Claims

1. A coherent, rigid, solid material made from a mixture said mixture comprising by weight

a. from about 20 to about 50 parts of expanded perlite,

b. from about 9.5 to about 19 parts of sodium or potassium silicate in the form of an aqueous solution thereof,

c. an amount sufficient to improve the transverse strength of said solid material, of a phosphate, said phosphate being capable of substantially dissolving in said aqueous solution, said amount being between about 0.05% and about 5.0% by weight of said mixture and;

d. from about 21 to about 67 parts of water, including that found in said aqueous solution.

4,336,069

HIGH STRENGTH AGGREGATE FOR CONCRETE

Vance H. Dodson, Walpole, and Lawrence R. Roberts, Acton, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 17, 1981, Ser. No. 235,190

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.[3] C04B *7/02*

U.S. Cl. 106—97 16 Claims

1. A cementitious concrete composition comprising a mixture of solid, particulate aggregate material of high strength and a cementitious binder therefor, said aggregate being comprised of particles of a hydrated mixture of Portland cement and fly ash wherein said Portland cement and fly ash are present in a weight ratio of from 1 part cement to at least one part ash, said fly ash upon analysis having a total calcium oxide content greater than about 10 percent by weight, the total additive amount of SiO_2, Al_2O_3 and Fe_2O_3 present in said fly ash being less than about 80 percent by weight, said fly ash further not having been first treated to promote activity prior to mixture with said Portland cement.

4,336,070

PROCESS FOR PREPARING POROUS SHAPED MATERIAL OF ACYLATED CHITIN DERIVATIVE

Junichi Koshugi, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,315

Claims priority, application Japan, Jul. 20, 1979, 54-92898

Int. Cl.[3] C08B *37/08*

U.S. Cl. 106—122 9 Claims

1. A process for producing a porous shaped material of acylated chitin derivative comprising:

(a) preparing an aqueous chitin solution containing 0.1 to 10% by weight of a solubilized derivative of chitin;

(b) adding 0.1 to 5 parts by weight of a diluent, 0.001 to 1 part of a porosity-regulating agent, and 0.01 to 0.1 part by weight of a non-ionic surfactant to 1.0 part by weight of the aqueous solution; and

(c) further adding the resultant liquid mixture of (a) and (b) to an acylating solution comprising:

(i) an organic acid anhydride in an amount corresponding to 1 to 100 times by equivalent weight per 1 amino group of the solubilized group of chitin;

(ii) an organic solvent in an amount equivalent to 10 to 1000 parts by weight of the organic acid anhydride; and
(iii) a non-ionic surfactant in an amount equivalent to 0.01

X2800

to 0.1% by weight of acylating solution; at a temperature of 5° to 80° C. thereby bringing the acylating solution into reaction with the solubilized derivative of chitin.

4,336,071

KNEADING AND MODELING COMPOUND AND THE USE THEREOF

Heinrich Schnorrer, Schwandorf, Fed. Rep. of Germany, assignor to Firma J. S. Staedtler, Nuremberg, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,479

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937843

Int. Cl.³ C08K *3/22*; C08L *1/26*

U.S. Cl. 106—170 **19 Claims**

1. In a kneading and modeling compound, including binding agents, plasticizers, solvents, fillers, pigments and other additives; the improvement comprising in that said filler includes at least about 5% aluminum hydroxide.

4,336,072

METHOD FOR REMOVING VINYL DECALS

Ronnie J. Moore, 2767 Whitehurst Dr., Marietta, Ga. 30062, and Michael D. Brown, Smyrna, Ga., assignors to Ronnie James Moore, Marietta, Ga.

Filed Dec. 22, 1980, Ser. No. 218,473

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—4 **3 Claims**

1. A method of removing a vinyl decal from a painted surface without substantially damaging said painted surface at temperatures between approximately 0° and 55° F., said method comprising the steps of:

contacting said decal for a time sufficient to loosen said decal from said painted surface with a chemical composition consisting essentially of between approximately 35% and 75% by weight methyl ethyl ketone and between approximately 25% and 65% by weight of an aromatic solvent selected from the group consisting of toluene, xylene and aromatic naphtha; and

physically removing said loosened decal from said painted surface.

4,336,073

GLASS CLEANING PROCESS AND APPARATUS

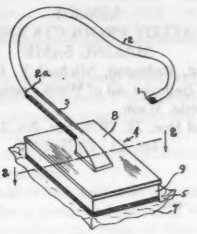
John H. Mack, 7208 Hitching Post La., Hyattsville, Md. 20783

Filed Aug. 18, 1981, Ser. No. 293,979

Int. Cl.³ B08B *1/00*; B43K *5/00*

U.S. Cl. 134—6 **5 Claims**

1. The method of cleaning water removable material from a nonporous surface at a predetermined temperature comprising placing a gas permeable wiping material in surface-to-surface contact with said surface to be cleaned, passing a moisture laden gas through said wiping material into contact with said non-porous surface, said moisture laden gas having a dew point higher than the temperature of said nonporous surface, whereby water from said gas condenses on said nonporous surface, loosening or dissolving said water removable material,



while moving said wiping material on said nonporous surface to remove said water removable material therefrom.

4,336,074

METHOD AND APPARATUS FOR CLEANING DRAINS

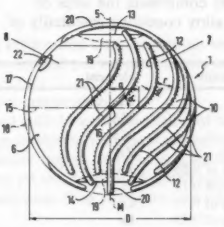
Albrecht Dinkelacker, Göttingen, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaft e. V., Gottingen, Fed. Rep. of Germany

Filed Mar. 12, 1980, Ser. No. 129,824

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910281; Mar. 15, 1979, 2910281

Int. Cl.³ B08B *9/04*

U.S. Cl. 134—8 **17 Claims**



1. Method for cleaning the bottom portion of large cross-section drains, which are only partly filled with a liquid flowing along the drain bed, from contaminants deposited on the drain bed, comprising rolling a cleaning member freely along the drain bed under the action of the flowing liquid, braking the rolling movement so that the cleaning member moves at a lower travel speed than the average liquid flow rate of the flowing liquid in the drain so that the cleaning member lies by its weight and volume on the drain bed so as to be spaced from the sides of the drain, inducing a circumcirculating flow of the flowing liquid about the cleaning member and simultaneously developing an increased flow rate, said cleaning member having an outer surface formed so as to define a plurality of rolling meridians which define a plurality of rolling paths along which the cleaning member can roll and a like plurality of meridian planes, said circumcirculating flow being comprised of two lateral partial flows at either side of the cleaning member resulting in a downstream flow to flush deposited contaminants to the downstream side of the cleaning member, wherein the cleaning member has an asymmetrical surface formed from a plurality of non-intersecting elements which are asymmetrical with respect to all meridian planes and which cooperate together to induce the circumcirculating flow to be in the form of two partial circumcirculation flows which are asymmetrical with respect to the rolling paths of the cleaning member thereby laterally deflecting the downstream flow out of the rolling path of the cleaning member to flush contaminants

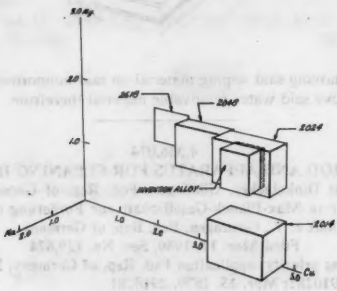
suspended in the circumcirculation flow out of that rolling path.

4,336,075

ALUMINUM ALLOY PRODUCTS AND METHOD OF MAKING SAME

William E. Quist, Redmond; Michael V. Hyatt, and Sven E. Axter, both of Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 28, 1979, Ser. No. 108,214
Int. Cl.³ C22F 1/04
U.S. Cl. 148—2 **22 Claims**



7. A method of producing a product from a 2000 series aluminum alloy comprising the steps of:

forming an alloy consisting essentially of

weight percent	element
4.2 to 4.7	Cu
1.3 to 1.8	Mg
0.8 to 1.3	Mn
0.08 to 0.15	Zr
a maximum of 0.25	Zn
a maximum of 0.15	Ti
a maximum of 0.10	Cr
a maximum of 0.15	Fe
a maximum of 0.12	Si
a maximum of 0.05	each other trace element
a maximum of 0.15	total of said other trace elements
the balance being	Al,

forming a body from said alloy

homogenizing said body to provide a substantially uniform distribution of alloying elements, and

hot working said body to form a wrought product, said hot working being conducted at temperatures effective to yield a product having a highly elongated grain and substantially unrecrystallized microstructure after solution treating and quenching said body.

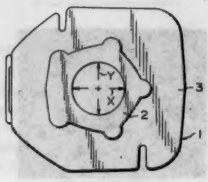
4,336,076

METHOD FOR MANUFACTURING ENGINE CYLINDER BLOCK

Mizuo Edamura, Kobe; Shyunji Takamoto, Akashi; Satoshi Furuitsu, Kakogawa; Norikatsu Bekku, Takarazuki, and Toshiaki Katayama, Yokohama, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 887,379, Mar. 16, 1978, abandoned. This application May 14, 1980, Ser. No. 149,689
Claims priority, application Japan, Mar. 17, 1977, 52-29590
Int. Cl.³ C22F 1/04
U.S. Cl. 148—3 **5 Claims**

1. Method for manufacturing an engine cylinder block comprising the steps of moulding an aluminum alloy consisting essentially of in weight between about 4 to 14% of Si, 1 to 5% of Cu and 0.2 to 0.8% of Mg to form a blank of the cylinder block and subjecting the moulded blank to a heat treatment at



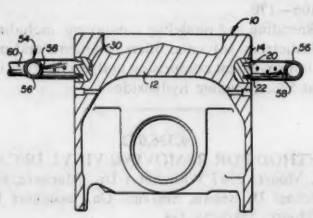
between about 200° to 400° C. for between about 1 to 10 hours, followed by air cooling the blank.

4,336,077

METHOD OF CRYOGENICALLY HARDENING AN INSERT IN AN ARTICLE

J. Michael Leach, Washington, and Walter L. Harvey, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00227, § 371 Date Mar. 3, 1980, § 102(e) Date Mar. 3, 1980, PCT Pub. No. WO81/02586, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 3, 1980, Ser. No. 189,957
Int. Cl.³ C21D 6/04, 1/18; F16J 1/04
U.S. Cl. 148—3 **16 Claims**



1. A method of cryogenically hardening an insert (14) in an article (12) comprising:

Step (a) casting an article (12) at least partly around an insert (14); and

Step (b) cryogenically hardening and expanding at least a portion of the insert (14) more tightly into engagement with the article (12).

4,336,078

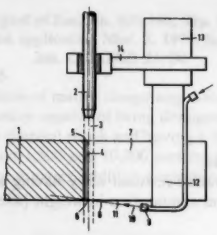
PROCESS AND APPARATUS FOR THE SEPARATION OF METALLURGICAL PRODUCTS

Waldemar Radtke, Oberhausen, Fed. Rep. of Germany, assignor to Thyssen Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,342
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914628
Int. Cl.³ B23K 7/08
U.S. Cl. 148—9 R **23 Claims**

1. In a process for separating metallurgical products, such as ingots, slabs or plate-shaped workpieces, and in particular for transversely dividing the cast strand in continuous casting plants and for longitudinally dividing continuous cast ingots which have previously been cut into lengths, in which the metallurgical products are divided using at least one cutting torch which forms a cutting jet disposed on one side of the product and by following a prescribed cutting line and in which a front cutting edge is formed on the surface of the product facing said cutting torch and a rear cutting edge is

formed on the opposite side of the product and a cutting joint is formed therebetween, the improvement comprising directing at least one gaseous jet at said rear cutting edge of said



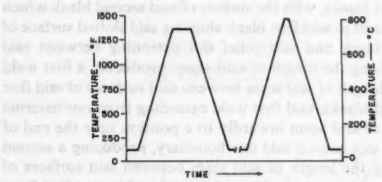
product, whereby a mixture of molten metal and liquid slag formed during cutting of said product is blown away from said rear cutting edge of said product thereby preventing the formation of flame burrs at the edges of said cutting joint.

4,336,079

STABILIZATION OF CARBON IN AUSTENITIC ALLOY TUBING

Clark McG. Owens, Colchester, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 9, 1979, Ser. No. 82,508
Int. Cl.³ C22F 1/10
U.S. Cl. 148—11.5 N 4 Claims



1. A process for stabilizing carbon in solution-annealed Inconnel tubing having a carbon content in the range of about 0.02–0.05 weight percent, comprising the steps of: heavily cold working the tubing; annealing the cold worked tubing for at least fifteen minutes but less then two hours within a temperature range of 1300°–1500° F., so that essentially all the carbon precipitates in the grain boundaries as stabilized chromium carbide having chromium healed envelopes; whereby the tubing is permanently immune from intergranular corrosion so long as the tube temperature never exceeds the carbide dissolution temperature.

4,336,080

METHOD FOR MANUFACTURING HIGH-STRENGTH COLD-ROLLED STEEL STRIP EXCELLENT IN PRESS-FORMABILITY

Kazuhide Nakaoka, Yokohama; Akihiko Nishimoto, Isehara, and Yoshihiro Hosoya, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1980, Ser. No. 208,537
Claims priority, application Japan, Dec. 14, 1979, 54-161615
Int. Cl.³ C21D 8/04
U.S. Cl. 148—12 C 9 Claims

1. An improved process for manufacturing a high-strength cold-rolled steel strip excellent in press-formability, which comprises the steps of:

preparing a slab of an aluminum-killed steel consisting essentially of, in weight percentage:

Carbon	from 0.02	to 0.06%,
Manganese	from 0.06	to 0.25%,
Phosphorus	from 0.01	to 0.06%,
Soluble aluminum	from 0.020	to 0.060%,
Nitrogen	up to 0.005%, and,	

the balance iron and incidental impurities;

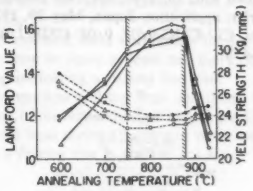
hot-rolling said slab to prepare a hot-rolled steel strip;

coiling said steel strip at a temperature within the range of from 650° to 770° C.;

cold-rolling said hot-rolled steel strip thus coiled to prepare a cold-rolled steel strip;

subjecting said cold-rolled steel strip to a continuous annealing treatment for a prescribed period of time at an annealing temperature within the range of from 750° to 880° C.;

subjecting said cold-rolled steel strip thus continuously annealed to a quenching treatment at a prescribed cooling rate; and then,



subjecting said cold-rolled steel strip to an overaging treatment for a prescribed period of time at a prescribed temperature;

the improvement comprising:

cooling said cold-rolled steel strip subjected to said continuous annealing treatment from said annealing temperature to a temperature region of from Ar_1 to $Ar_1+60°$ C. by blowing a gas jet onto said cold-rolled steel strip; then,

carrying out said quenching treatment at a cooling rate of at least;

$\exp\{-5.6(C\ wt.\%\gamma+MN\ wt.\%/6+Si\ wt.\%/24)+7.8\}°$ C./sec

from said temperature region of from Ar_1 to $Ar_1+60°$ C. to convert the structure of said cold-rolled steel strip into a dual-phase structure comprising a ferrite phase of at least 90 vol.% and a low-temperature transformation phase of up to 10 vol.%; and then,

applying said over-aging treatment at a temperature within the range of from 260° to 360° C.;

thereby forming said cold-rolled steel strip having a Lankford value of at least 1.4.

4,336,081

PROCESS OF PREPARING STEEL COIL SPRING

Toshio Hijikata, Fujisawa, and Kazuhiro Kawasaki, Hiratsuka, both of Japan, assignors to Neturen Company, Ltd., Tokyo, Japan

Division of Ser. No. 34,951, Apr. 30, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,625
Claims priority, application Japan, Apr. 28, 1978, 53-49930; Jun. 23, 1978, 53-75445; Jun. 23, 1978, 53-75446; Aug. 25, 1978, 53-102752; Aug. 25, 1978, 53-102753
Int. Cl.³ C21D 8/06, 9/02
U.S. Cl. 148—12 B 7 Claims

1. A process of preparing a coil spring, which comprises heating a steel wire, having a diameter of more than 10 mm, of a hardenable carbon steel containing at least 0.27% C, 0.15–2.2% Si and 0.60–1.65% Mn, by high-frequency induction at a rate of greater than 100° C./second to a temperature within the austenitic range for the hardenable carbon steel,

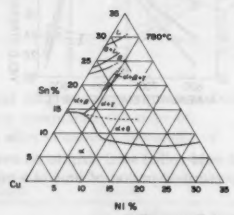
quenching the thus heated steel wire, heating the quenched steel wire by high-frequency induction at a rate of greater than 100° C./second to between 300° and 600° C., stopping said heating, holding the steel wire for 10 to 60 seconds and then cooling the thus heated steel wire at a cooling rate of greater than 50° C./second to yield a cold plastic workable steel wire having a tensile strength of greater than 150 Kgf/mm^2, subjecting the cold plastic workable steel wire to cold plastic working to shape the wire into the form of a coil spring, and heating the resultant shaped wire to between 300° and 500° C. for from 30 to 60 minutes to temper said shaped wire and produce a coil spring product, with the proviso that the maximum temperature to which said shaped wire is heated is less than the maximum temperature to which said quenched steel is heated.

4,336,082

TIN-RICH LEAD-BRONZE BASED FORGED AND ROLLED MATERIALS

Tadao Kimura, No. 1-6-207, Sakurajyosui 1-Chome, Setagaya-ku, Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,822
Claims priority, application Japan, May 29, 1979, 54-66657
Int. Cl.³ C22C *9/02, 9/08;* C22F *1/08*
U.S. Cl. 148—433 **1 Claim**



1. A tin-rich lead-bronze based forged and rolled material consisting of 9–12% of Sn, 2–8% of Pb, 1–2% of Ni and 88–78% of Cu, wherein Pb is allowed to exist in a finely dispersed condition at the grain boundaries in the α-phase of the Cu-Sn-Ni ternary equilibrium diagram and such finely dispersed condition is enhanced and stabilized by alternate forging and heat treatment to grow and fix a forged texture substantially free of segregation and then working the forged and heat treated material by an amount of at least 40% without intermediate heat treatment to retain and protect the stabilized texture.

4,336,083

METHOD OF PRODUCING KNIFE FOR CUTTING HOT METAL

Martin J. Dempsey, Bethel Park, Pa., assignor to Asko, Inc., West Homestead, Pa.

Filed Apr. 24, 1980, Ser. No. 143,379
Int. Cl.³ C21D *9/00;* B23D *25/06;* B26D *1/56;* B23K *9/00*
U.S. Cl. 148—127 **3 Claims**

1. The method of producing a knife for cutting metal at high temperature, said knife being produced from parts to be joined including a first blank for a base composed of alloy steel and a second blank for a cutting edge composed of a high-temperature-resistant alloy, said alloy steel having substantially the following nominal composition in weight percent:

C—0.30
Mn—0.48
P—0.015
S—0.015
Si—0.20
Ni—0.12
Cr—0.91
Mo—0.20
Fe—Remainder,

said high-temperature-resistant alloy having substantially the following nominal composition in weight percent:

Ni—52.5
Cr—19.0
Mo—3.0
Cb—5.1
Al—0.5
Ti—0.9
Fe—18.5
Mn—0.2
Si—0.2
C—0.04,

the said method comprising forming a relief slot along the length of the surface of said first blank, which surface is to be joined to said second blank, said relief slot extending internally of the ends of said first blank and being short compared to the width of said surface but being effective to absorb weld metal of welds terminating at said slot, abutting said second blank and said first blank to form a seam along the lengths of said first and second blanks, with the surface of said second blank which is to be joined to said first blank abutting said slotted surface of said first blank and said relief slot extending between said surfaces along the length of said seam, producing a first weld along the length of said seam between said surfaces of said first and second blanks, said first weld extending from one external boundary of said seam inwardly to a position near the end of said relief slot nearest said one boundary, producing a second weld along the length of said seam between said surfaces of said first and second blanks, said second weld extending from said opposite boundary of said seam inwardly to a position near the end of said relief slot nearest said opposite boundary, said welding forming a blank for said knife, hardening said blank of said knife in the following steps:

Age at about 1350° F. for 8 hours
Cool to about 1150° F. in steps of 100° F. per hour
Hold at about 1150° F. for about 10 hours
Air cool to room temperature—about 70° F. and finishing said blank to form a knife.

4,336,084

METHOD FOR MAKING PRIMER CONSTITUENTS

Venkataramaraj S. Urs, Godfrey, Ill., assignor to Olin Corporation, Stamford, Conn.

Filed Aug. 29, 1980, Ser. No. 182,362
Int. Cl.³ C06B *41/02*
U.S. Cl. 149—24 **12 Claims**

1. A method of forming a lead styphnate compound plus an oxygen-donating compound, in situ, for use in a priming mix, said method comprising reacting trinitroresorcinol with an oxygen-bearing compound selected from the group consisting of barium oxide, barium hydroxide compounds, barium carbonate, or mixtures thereof, in the presence of lead nitrate.

4,336,085

EXPLOSIVE COMPOSITION WITH GROUP VIII METAL NITROSO HALIDE GETTER

Franklin E. Walker, 18 Shadow Oak Rd., Danville, Calif. 94526, and Richard J. Wasley, 4290 Colgate Way, Livermore, Calif. 94550

Continuation-in-part of Ser. No. 610,166, Sep. 4, 1975, Pat. No. 4,142,927. This application Mar. 2, 1979, Ser. No. 16,746
Int. Cl.[3] C06B *31/00*
U.S. Cl. 149—45 6 Claims

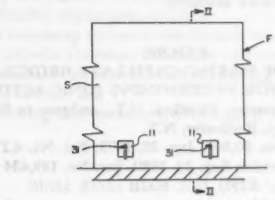
1. A composition of matter comprising a major portion of a metastable explosive capable of being detonated by a mechanical, electrical or thermal shock and having a detonation velocity between about 1,500 and 10,000 meters per second and a minor amount of a getter additive comprising a Group VIII metal nitroso halide.

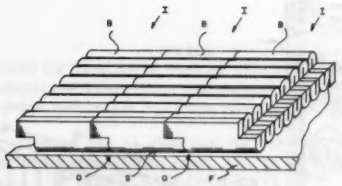
4,336,086

METHOD OF LINING A FURNACE WITH ROLL-TYPE INSULATION

James P. Rast, 9510 Herring Hill, Millington, Tenn. 38053

Continuation-in-part of Ser. No. 827,316, Aug. 24, 1977, abandoned. This application Sep. 18, 1980, Ser. No. 188,346
Int. Cl.[3] B32B *31/10*; C21B *7/06*; F23M *5/00*; F27D *1/16*
U.S. Cl. 156—71 9 Claims





5. A method of lining an interior surface of a furnace with roll-type ceramic fiber insulation, said method comprising:

(a) fixedly attaching a plurality of hook means to said interior surface of said furnace;

(b) folding back portions of said roll-type ceramic fiber insulation on themselves to create transverse folds in said roll-type ceramic fiber insulation;

(c) pressing said transverse folds onto said hook means to fixedly attach said roll-type ceramic fiber insulation to said hook means and to said interior surface of said furnace;

(d) overlapping the side edges of adjacent transverse folds;

(e) rolling portions of said roll-type ceramic fiber insulation into elongated rolls;

(f) tying lengths of string about said elongated rolls;

(g) gluing said elongated rolls to every substantially 90° bend formed by said interior surface of said furnace;

(h) abutting said transverse folds of said roll-type ceramic insulation and said elongated rolls; and

(i) gluing the abutting edges of said elongated rolls and said transverse folds together.

4,336,087

METHOD OF MARKING FISHING LINES

Leon L. Martuch, and Michael L. Martuch, both of 9187 Bay Hill Blvd., Orlando, Fla. 32811

Filed Mar. 30, 1981, Ser. No. 248,864
Int. Cl.[3] B29C *27/00*; B32B *31/26*
U.S. Cl. 156—85 9 Claims

1. A method of marking fishing lines comprising the steps of:

selecting heat shrinkable tubing;

marking said heat shrinkable tubing with a plurality of size code marks;

cutting said marked, heat shrinkable tubing between said marks thereon to leave at least one mark on one piece of cut tubing indicating a fishing line size;

slipping said marked and cut heat shrinkable tubing onto a fishing line of the size indicated by the marks thereon; and

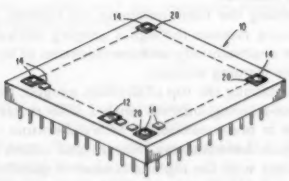
shrinking said heat shrinkable tubing onto said fishing line, whereby a fishing line is marked for size.

4,336,088

METHOD OF FABRICATING AN IMPROVED MULTI-LAYER CERAMIC SUBSTRATE

Richard J. Hetherington, Pine Plains; George E. Melvin, Poughkeepsie; Stephen A. Milkovich, Beacon, and Ernest N. Urfer, Hopewell Junction, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 164,645, Jun. 30, 1980, Pat. No. 4,302,625. This application Apr. 27, 1981, Ser. No. 258,222
Int. Cl.[3] H05K *1/14*
U.S. Cl. 156—89 4 Claims



1. An improved method of fabricating a monolithic sintered MLC substrate for a semiconductor package comprising

forming a plurality of first ceramic green sheets of a thickness in the range of 6–9 mils,

forming vias in said first sheets

filling said vias and imprinting metallurgy redistribution patterns with a conductive metallurgy paste on said first sheets,

forming a plurality of second ceramic green sheets,

forming vias and imprinting metallurgy patterns with a conductive metallurgy paste on said second sheets,

forming a single top ceramic green sheet of ceramic material of a thickness of at least 20% greater than the individual thickness of said first sheets,

forming a via pattern in said top sheet wherein at least some vias have a center to center spacing when fired in the range of 7–12 mils, with the via diameter being in the range of 35 to 55% of said center to center via spacing.

filling said vias in said top sheet with a conductive metallurgy paste, said metallurgy paste, when sintered, and the said ceramic material of said top sheet when sintered having a differential coefficient of expansion of at least 0.8×10^{-6}/°C.,

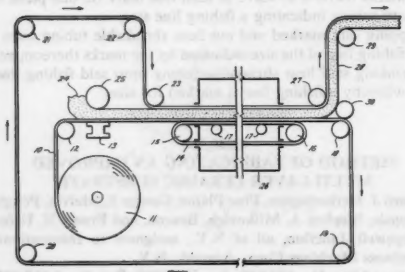
assembling said second sheets, in underlying relation to said first sheets, and said top sheet in overlying relation to said first sheets, sintering the resultant assembly to form a monolithic ceramic substrate having an internal conductive metallurgy system, the thickness relationship between said first sheets and said top sheet minimizing via to via cracking in said monolithic substrate.

4,336,089

METHOD OF PREPARING POLYURETHANE FOAM CARPET UNDERLAY HAVING A BARRIER FILM ATTACHED THERETO

Dan A. Asperger, Dalton, Ga., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,762
Int. Cl.³ B32B *31/16, 31/18*
U.S. Cl. 156—152 **1 Claim**



1. A method for preparing polyurethane carpet underlay which method comprises:

(A) a frothed, polyurethane-forming mixture applied onto a film material;

(B) passing the film containing the frothed, polyurethane-forming mixture through a gauging device so as to provide a substantially uniform thickness of frothed polyurethane-forming mixture;

(C) contacting the top of the thus gauged, frothed polyurethane-forming mixture with a film material which has been in previous contact with the bottom of said frothed polyurethane-forming mixture and which film that is in contact with the top and bottom of said frothed polyurethane-forming mixture is one continuous piece of film;

(D) curing said gauged frothed polyurethane-forming mixture with said continuous piece of film on top and bottom thereof;

(E) removing said film from the underside of the cured polyurethane and applying said film in a continuous manner to the top of said gauged, frothed, polyurethane-forming mixture in step (C); and

(F) thereafter cutting the thus prepared carpet underlay having a film attached to one surface into desired lengths.

4,336,090

METHOD OF MAKING SANDWICH PANEL

R. John Hilton, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

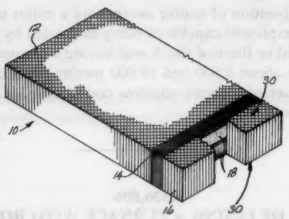
Filed Jun. 30, 1980, Ser. No. 164,437
Int. Cl.³ B32B *3/12*
U.S. Cl. 156—154 **1 Claim**

1. In the method of fabricating a honeycomb sandwich panel assembly having a pair of face sheets with a honeycomb core therebetween, said method including the steps of:

providing a core blank having a higher density core permanently attached to a lower density core;

temporarily fastening a further low density honeycomb core to said high density core;

machining said core blank and said further honeycomb core to a desired height;



providing a pair of face sheets;

attaching separator film to upper and lower surfaces of said further honeycomb core;

applying adhesive to said face sheets prior to assembling and curing said sandwich assembly; and, then

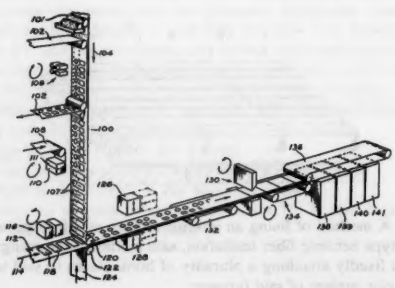
removing said further honeycomb core from said assembled and cured sandwich assembly.

4,336,091

METHOD OF MAKING CAPILLARY BRIDGE IN APPARATUS FOR DETERMINING IONIC ACTIVITY

William F. Gottermeier, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 50,845, Jun. 20, 1979, Pat. No. 4,273,639.
This application Sep. 22, 1980, Ser. No. 189,434
Int. Cl.³ B29D *7/02;* B32B *31/18, 31/30*
U.S. Cl. 156—244.12 **6 Claims**



1. A method for making a device which includes (1) a pair of solid electrodes for generating therein an electrical potential having a predetermined relationship to the amount of ionic analyte activity present in a contacting sample of an aqueous solution, and (2) a frame member; said member comprising the steps of:

encapsulating an elongated ribbon of porous material in nonporous material which is sized to substantially cover the frame member;

applying the electrodes in a spaced-apart relationship to the frame member;

forming a pair of holes in said nonporous material through the ribbon of porous material; and

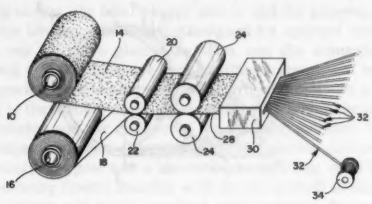
bonding said nonporous material to the frame member with the electrodes therebetween in an orientation such that each of said holes aligns with a different electrode.

4,336,092

RETROREFLECTIVE FIBER AND METHOD OF MAKING SAME

Allan Wasserman, 29 Kennedy Boulevard, Lincoln, R.I. 02865

Filed Mar. 24, 1980, Ser. No. 133,281
Int. Cl.[3] B32B *31/00;* D02G *3/00*
U.S. Cl. 156—269 5 Claims



1. A method of making a thread-like continuous fiber having retroreflective characteristics and having sufficient structural strength to permit it to be effectively used during knitting, weaving or spinning of a composite yarn or fabric consisting of the following steps:

(A) Providing a thin film of retroreflective material consisting of a plurality of exposed minute glass beads bonded in a flexible elastomeric material;

(B) Laminating thereto a thin flexible supporting film so as to provide a laminate defined by said retroreflective material on one surface and said supporting film on the opposite surface; and

(C) Slitting said laminate into elongated thread-like fibers.

4,336,093

METHOD OF STACKING METAL SHEET MATERIALS

Ken Kohayakawa; Hisao Ohba, and Atuhiro Sano, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 14, 1980, Ser. No. 177,960
Claims priority, application Japan, Aug. 15, 1979, 54-103903
Int. Cl.[3] B32B *31/04, 31/18*
U.S. Cl. 29—399 8 Claims

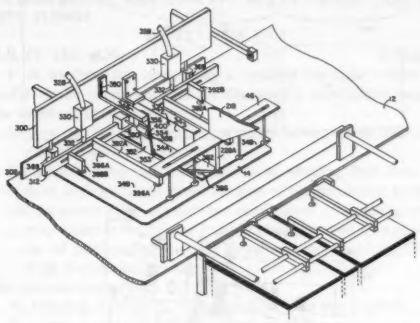
1. In a method for stacking and cutting photosensitive printing plate precursors which comprise a photosensitive layer on a metal support, said method comprising intimately contacting an interleaf with a photosensitive printing plate precursor by applying electric charges for establishing electric fields between the interleaf and the precursor, stacking a number of the resulting precursors intimately contacted with the interleaf in a manner so that the interleafs are between adjacent precursors, and then cutting the stacked precursors into a desired size, the improvement wherein said interleaf comprises paper with plastic coated on only one side of said paper and said interleaf is placed on the photosensitive printing plate precursor in such a manner that the photosensitive layer of said precursor is in intimate contact with the plastic coating of said interleaf.

4,336,094

SYSTEM FOR AND METHOD OF LAMINATING

Leland F. Mills, Dunbarton, N.H., assignor to Crathern Engineering Co., Inc., Contoocook, N.H.

Filed May 29, 1981, Ser. No. 268,198
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—299 19 Claims



1. A system for registering and securing, in a predetermined relation, three substantially planar sheet members, each to a different portion of a surface of a sheet of material such that one of said sheet members is disposed between the other two sheet members, said system comprising:

support means for supporting said sheet of material;

means for moving said three sheet members each from a first location to a second location wherein each of said sheet members is disposed at said second location in a plane substantially parallel to said sheet of material;

means at said second locations for centering said one sheet between and with respect to said other two sheet members;

means at said second location for registering said three sheet members with respect to the respective portions of said surface of said sheet of material; and

plunging means for moving said members from said second location into contact with the respective portions of the surface of said sheet of material.

4,336,095

MACHINE FOR LABELING BODIES AND SHOULDERS OF CONTAINERS

Wolfgang Hoffmann, Turlock, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

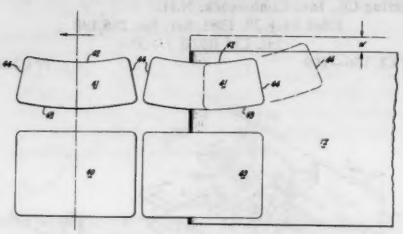
Filed Nov. 13, 1979, Ser. No. 93,232
Int. Cl.[3] B32B *31/00;* B65C *9/40, 9/06;* B44C *5/00*
U.S. Cl. 156—361 5 Claims

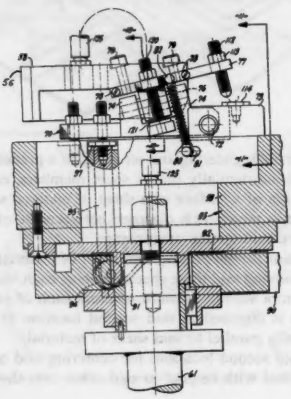
1. In apparatus for applying segments of flexible sheet material to articles and comprising a rotary transport rotating about a fixed main axis and comprising at least one sector having a cylindrical peripheral surface concentric to said main axis and equipped with means adapted to grip such segments in succession at a segment receiving station, to hold each segment during transport from such station to a segment applying station and to release each segment to an article at the segment applying station, the improvement which comprises

(a) means mounting said sector for movement about two tilt axes, one such axis (the first axis) being radial with respect to said transport, the other such axis (the second axis) being perpendicular to the first axis, and

(b) tilt operating means operating during each revolution of the transport to cause such sector to undergo a cycle commencing at a start position at the segment receiving station at which the sector is concentric to said main axis,

then the sector is rotated about both its first and second axes to assume the desired attitude at the segment apply-





ing station and then the sector is rotated back to its start position.

4,336,096

BELT PRESS APPARATUS WITH HEAT SHIELD

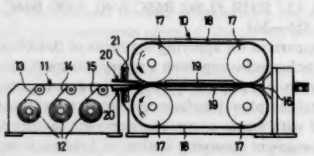
Gerd Dedekind, Bielefeld, Fed. Rep. of Germany, assignor to Theodor Hymmen KG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,647

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011217

Int. Cl.³ B30B *5/06, 15/34*

U.S. Cl. 156—498 **9 Claims**



1. Apparatus for joining a plurality of band-shaped layers of material while passing through a dual belt press equipped with rotating steel belts wherein the layers of material can be pressed together under the influence of heat, characterized in that at the intake side of the dual belt press, between each steel belt and the adjacent layer of material, there is disposed a protective shield which dams the heat radiated from the steel belt over the entire width of the belt.

4,336,097

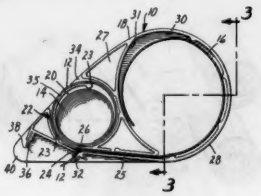
DISPENSER FOR LINER-WOUND TAPE

Craig L. Van Kampen, Oakdale, and Carl S. Ahlberg, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 23, 1980, Ser. No. 199,701

Int. Cl.³ B32B *35/00*

U.S. Cl. 156—527 **15 Claims**



1. A hand held dispenser by which lengths of pressure-sensitive adhesive coated tape may be withdrawn from a supply roll of said tape convolutely wound with a release liner between its coils, said dispenser comprising walls defining:

a first cavity adapted for storing said supply roll;

a second cavity adapted for storing said liner, said second cavity being partially defined by an inner wall surface adapted to direct liner pushed into said second cavity to wind into a coil;

a path connecting said cavities, said path being adapted for passage of said tape and liner out of said first cavity, and for passage of said liner into said second cavity; and

an opening along said path through which opening said tape may be withdrawn from said dispenser, said walls defining said opening having a separating edge transverse of said path adjacent said first cavity around which edge tape may be peeled away from the liner as the tape is withdrawn from said dispenser, so that withdrawing tape from said opening will propel said liner along said path and into a coil in said second cavity.

4,336,098

LABELING STATION FOR A LABELING MACHINE, ESPECIALLY FOR BOTTLES

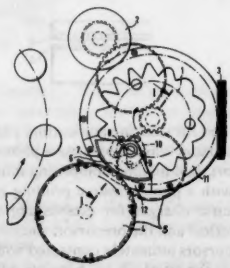
Rudolf Zodrow, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,951

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013082

Int. Cl.³ B65C *9/16*

U.S. Cl. 156—568 **4 Claims**



1. In a labeling machine having a labeling station including a support means for revolving the support about its axis successively past a gluing station, a label storage station and a label gripping cylinder, at least one gluing segment rotatably mounted on the support and moving on a circular orbit with

the support axis as center, the gluing segment having a cylindrically curved pickup surface with a radius smaller than the distance between the support axis and the gripping cylinder, the support and the gripping cylinders and each gluing segment being coupled to one another through a nonuniformity gearing such that the gripping cylinder and the support have the same sense of rotation and each gluing segment performing a rotatory movement in the opposite direction which is accelerated or retarded such that its pickup surface rolls against the gluing station, the label storage station and the gripping cylinder, the labeling station being designed for optional operation with one or more gluing segments and the nonuniformity gearing being replaceable such that the transmission ratio of the gearing from the support to the gripping cylinder is reciprocal to the number of gluing segments with which the support is provided and the division of the gripping cylinder, the improvement wherein the nonuniformity gearing comprises a stationary sun gear and a lantern pinion gearing, each lantern pinion being fixedly coupled with the drive shaft of each gluing segment and being provided with lanterns, the sun gear having teeth with the flanks of different steepness according to the acceleration or retardation in individual rotation which is required for the rolling movement of each gluing segment at the gluing station, label storage station and gripping cylinder, at least the section of the sun gear which acts in the area of the gripping cylinder being interchangeable.

4,336,099

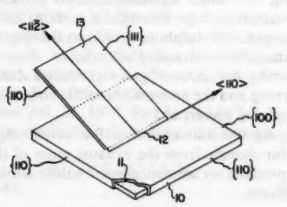
METHOD FOR PRODUCING GALLIUM ARSENIDE SINGLE CRYSTAL RIBBONS

Wirojana Tantraporn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 94,099, Nov. 14, 1979, abandoned. This application Mar. 6, 1981, Ser. No. 241,280

Int. Cl.³ C30B *25/04, 29/42*

U.S. Cl. 156—614 **3 Claims**



1. A method of producing gallium arsenide single crystal ribbon comprising the steps of:

masking a wafer of monocrystalline gallium arsenide with an insulating layer which has an elongated slot in the <110> crystallographic direction;

placing said wafer in a H_2-$AsCl_3$-Ga vapor phase epitaxy system in which it is heated and gallium and arsenic atoms are carried in a gas stream to the exposed heated wafer under prescribed conditions to epitaxially grow out of said slot in the <1$\bar{1}$2> direction, which is the ribbon length direction, a thin flexible ribbon of single crystal gallium arsenide having a thickness and width approximately equal to the dimensions of said slot and having {111} plane major surfaces and {110} plane long edges, said ribbon continuing to grow in said gas stream at a high growth rate along the ribbon length and having negligible growth in the directions of said major surfaces and long edges so that the ribbon cross section is substantially constant throughout; and

retracting said wafer and thin flexible ribbon at the ribbon growth speed to maintain the region of new growth in said gas stream until a designated ribbon length is reached and said gas stream is turned off.

4,336,100

METHOD OF PRODUCTION OF ELECTRICALLY CONDUCTIVE PANELS AND INSULATING BASE MATERIALS

Theodor Passlick, Burgstemmen, Fed. Rep. of Germany, assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 937,209, Aug. 28, 1978, abandoned. This application May 18, 1981, Ser. No. 264,857

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2739494

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—630 **8 Claims**

1. A method for producing a molded laminate which is useful in the preparation of an electrically conductive panel, the molded laminate having

(i) a carrier layer comprising a metal having on at least one side at least one layer of

(ii) an insulating material capable of yielding free flow of heat, and on the external surface of the insulating layer

(iii) an electrically conductive outer layer comprising copper, wherein the carrier layer is characterized by a plurality of perforations which have been substantially filled with the insulating material,

the process comprising the steps of:

A. forming a plurality of perforations in a metal panel;

B. cleaning and deburring the surface of the metal panel and perforations;

C. applying on at least one side of the panel at least one layer of an insulating material capable of yielding free flow of heat;

D. applying an electrically conductive outer layer comprising copper on the surface of the layer of insulating material;

E. heating the structure at a temperature of from 150° to 200°

C. and applying a pressure of from 10 to 25 bar, for a period of 15 to 140 minutes, until the insulating material substantially fills the perforations, the diameter of the filled perforation being from 0.20 to 1 millimeter larger than the final desired hole diameter;

F. applying a layer of an etch-resistant masking material on selected areas of the surface of the copper layer corresponding to the desired pattern of conductor lines;

G. etching away the unmasked portions of copper from the surface of the insulating layer;

H. thereafter removing the etch-resistant masking material from the masked areas of copper;

I. applying a layer of adhesion promoting material; and

J. providing a second pattern of conductor lines on the surface of the laminate structure.

4,336,101

PROCESS AND APPARATUS FOR RECOVERING CLEAN WATER AND SOLIDS FROM AQUEOUS SOLIDS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

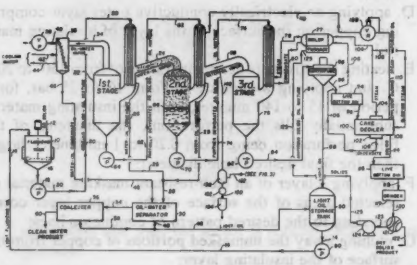
Continuation of Ser. No. 719,515, Sep. 1, 1976, Pat. No. 4,240,974. This application Feb. 11, 1981, Ser. No. 233,318

Int. Cl.³ B01D *1/26*

U.S. Cl. 159—16 S **2 Claims**

1. An apparatus for recovering clean water and substantially dry, oil-free solids from aqueous solids dehydrated in a light fluidizing oil medium with said aqueous solids being originally associated with a heavy, relatively non-volatile oil, said apparatus comprising (1) a tank adapted to receive a stream of said aqueous solids and provided with a stirring or mixing mechanism, (2) a light fluidizing oil reservoir, (3) means for transmitting light fluidizing oil from said light oil reservoir to said tank wherein said light fluidizing oil and aqueous solids may be mixed, (4) a dehydrating evaporator, (5) a conduit extending from said tank to said evaporator wherethrough may flow a stream of aqueous solids admixed with light fluidizing oil from said tank into the evaporating region of said dehydrating evap-

orator, (6) a condenser, (7) a conduit extending from said dehydrating evaporator to said condenser through which may flow a mixture of water vapor and light oil vapor formed as a result of heating of said aqueous solids and light fluidizing oil mixture, (8) an oil-water separating means, (9) a conduit extending from said condenser to said oil-water separating means wherethrough may flow a mixed condensate of water and light oil, (10) means for separately withdrawing light oil and clean water from said oil-water separating means, (11) a conduit extending from said withdrawing means to said light fluidizing oil reservoir wherethrough may flow a stream of light oil, (12) a liquid-solid separating means, (13) a conduit extending from said dehydrating evaporator to said liquid-solid separating means wherethrough may flow a stream of a slurry of substantially anhydrous solids and their originally associated heavy, relatively non-volatile oil in light fluidizing oil, (14) a deoiler means, (15) means for providing blowing steam to said deoiler means for direct contact with material fed thereto to be deoiled therein and thereby, (16) a conduit extending from said liquid-solid separating means to said deoiler means wherethrough may flow a stream of solids carrying residual light fluidizing oil, (17) condensing means separate from said condenser (6), (18) a conduit extending from said deoiler means to said condensing means wherethrough may flow a mixture of effluent blowing steam and vaporized residual light fluidizing oil removed from said solids by that steam, (19) a light-heavy oil



tank, (20) a conduit extending from said liquid-solid separating means to said light-heavy oil tank wherethrough may flow a mixture of light fluidizing oil and heavy oil extracted from said solids, (21) a stripping evaporator wherein the light fluidizing oil component of said oil mixture may be extracted therefrom by heat evaporation, (22) a conduit extending from said light-heavy oil tank to the evaporating region of said stripping evaporator wherethrough may flow said oil mixture, (23) means for injecting steam into said conduit (22) for mixing with said oil mixture flowing therethrough and heating the same, (24) a conduit extending from the vapor chamber of said stripping evaporator to said condensing means (17) wherethrough may flow a mixture of water vapor and light oil vapor formed by heat evaporation in said stripping evaporator to mix and be condensed in said condensing means with said mixture of effluent blowing steam and vaporized residual light fluidizing oil from said deoiler means (14), and (25) a conduit extending from said condensing means to said oil-water separating means (8) wherethrough may flow a mixed condensate of water and light oil to mix and be processed in said oil-water separating means with said mixed condensate of water and light oil from said condenser (6) whereby a combined stream of all separated light oil fractions may be obtained at said withdrawing means (10) and conducted therefrom through said conduit (11) to said reservoir (2) for recycling therefrom by means (3) to tank (1) as fluidizing oil.

4,336,102

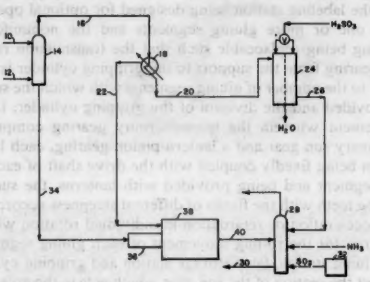
METHOD FOR RECOVERY AND REUSE OF AMMONIA IN AMMONIA-BASE SULFITE COOKING LIQUORS

Lawrence J. Jacobs, East Hartford, and Carl R. Bozzuto, Enfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 6, 1980, Ser. No. 194,360

Int. Cl.³ D21C *11/02*

U.S. Cl. 162—30.1 **4 Claims**



1. A process for the recovery and reuse of ammonia in ammonia-base sulfite cooking liquors comprising the steps of:

steam stripping spent ammonia-base sulfite cooking liquor to produce a vapor and a liquor residue;

condensing the vapor formed during the steam stripping to form a dilute aqueous solution comprising ammonia or ammonium hydroxide in water;

burning the liquor residue produced during steam stripping and non-condensed gases from the condensing step to produce an exhaust gas containing sulfur dioxide;

passing the dilute aqueous solution produced during the condensing step through a cation exchange column charged with sulphurous acid to thereby form an ammonium sulfite containing solution;

delivering the exhaust gases produced during the step of burning and the ammonium sulfite containing solution to a fortifying tower; and

fortifying the ammonium sulfite containing solution with sulfur dioxide from the exhaust gases of the burning step to produce an ammonia-based sulfite cooking liquor concentrate.

4,336,103

METHOD OF REPAIRING PARTLY BURNT-OFF FUEL ELEMENTS IN THE FUEL-ELEMENT PIT PRESSURIZED WATER REACTORS AND DEVICE THEREFOR

Erich Kätscher, Marloffstein; Klaus Knecht, and Heinz Knaab, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft AG, Mulheim, Fed. Rep. of Germany

Continuation of Ser. No. 822,676, Aug. 8, 1977, abandoned. This application Feb. 14, 1980, Ser. No. 121,504

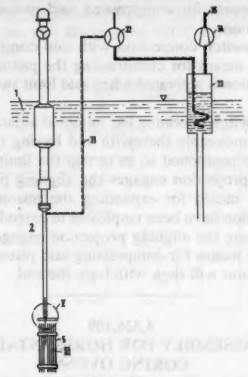
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635501

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—245 **5 Claims**

1. Device for exchanging fuel rods of partly burnt-off fuel element assembly in a water filled fuel-element pit of a pressurized-water reactor by removing the fuel element assembly head or foot, removing defective fuel rods and replacing them with new intact fuel rods, comprising a tubular apparatus being operable from a service side of the pit including an outer support tube having a lower end, a guide tube being concentrically disposed within said outer support tube and being spaced from said outer support tube defining a first space therebetween and

a second space within said guide tube being in communication with said first space, a pulling tube being disposed in and sealed to said guide tube and having an inner diameter substantially corresponding to the diameter of the fuel rods, a lockable gripper connected to said pulling tube, a water discharge pipe being in communication with said first and second spaces, an eddy current measuring probe being disposed at said lower end



of said outer support tube, a centering plate being attachable to a fuel element after removal of the head or foot thereof, said centering plate having centering bores formed therein through which said gripper is passable for reaching the fuel rods, a suction pump connected to said water discharge pipe, a gas separator connected to said suction pump, and a purification and waste gas collecting system connected to said gas separator.

4,336,104

INSPECTION AND TESTING DEVICE

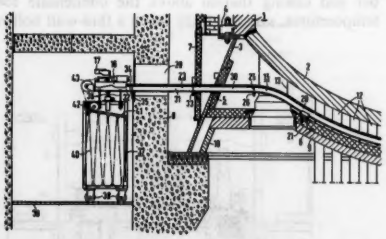
Dietgar Figlhuber; Johannes Gallwas, both of Erlangen; Robert Weber, Uttenreuth, and Jakob Weber, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,067

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1978, 2833716

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—249 **9 Claims**



1. Inspection and testing device for the bottom of nuclear reactor pressure vessels, comprising an insulation layer and a shielding layer enclosing the pressure vessel, a plurality of parallel tracks fitted to the bottom of the pressure vessel, each track having a plurality of sections and means for firmly connecting said sections together, each track having a first part fixed to the bottom of the pressure vessel and a second part detachable from said first part and passing through a closable opening formed in said insulation and shielding layers, said second parts having substantially horizontal end regions disposed outside said shielding layer, and a testing and inspection device connected to said tracks for inspecting and testing the bottom of the pressure vessel.

4,336,105

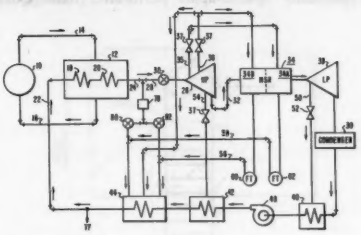
NUCLEAR POWER PLANT STEAM SYSTEM

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1979, Ser. No. 100,677

Int. Cl.³ G21C *7/00*

U.S. Cl. 60—644.1 **13 Claims**



1. In a nuclear power plant steam system including a steam generating means for generating steam; a steam turbine for conducting said generated steam therethrough and having at least first and second steam extraction points for extracting steam therefrom, the steam pressures of said first and second extraction points varying as a function of the plant loading conditions with the steam pressure of said first extraction point being greater than that of said second; a condenser for condensing exhausted steam from said steam turbine; a return path for returning said condensed steam as feedwater to said steam generating means; and at least one feedwater heater unit disposed in said return path for preheating the feedwater conducted therethrough to a final feedwater temperature prior to entering said steam generating means, apparatus for maintaining the final feedwater temperature above a predetermined temperature value comprising:

first means for providing, upon activation, steam directly from said first extraction point to said one feedwater heater unit as supplemental heating steam to preheat the feedwater conducted therethrough;

second means for providing steam directly from said second extraction point to said one feedwater heater unit as heating steam to preheat the feedwater conducted therethrough;

means for monitoring steam system parameters representative of the power plant loading conditions; and

controlling means, governed by said monitoring means, to activate said first means to provide supplemental heating steam to said one feedwater heater unit directly from said first extraction point solely at times when the monitored steam system parameters reflect power plant loading conditions which are below a first predetermined power plant loading condition.

4,336,106

APPARATUS FOR THE SOLVENT EXTRACTION OF AROMATIC HYDROCARBONS FROM A HYDROCARBON MIXTURE

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 17, 1980, Ser. No. 198,037

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.³ B01D *11/04*; C10C *3/08*

U.S. Cl. 196—14.52 **4 Claims**

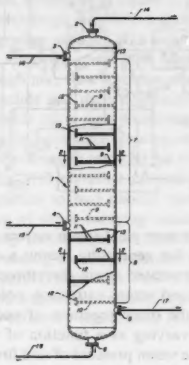
1. A multiple stage extractor column for countercurrent contact of an upwardly moving hydrocarbon phase and a downwardly moving solvent phase which comprises:

(a) an enclosed vertically elongated shell having an overhead raffinate outlet means, an upper lean solvent inlet means, an intermediate hydrocarbon feedstock inlet

means, a lower hydrocarbon reflux inlet means, and a bottom aromatics-rich solvent outlet means;

(b) an upper extraction section comprising a first plurality of vertically spaced-apart perforated fixed extraction trays, including upcomer means, traversing the interior of said shell in a horizontal plane;

(c) a lower backwash section comprising a second plurality of vertically spaced-apart perforated fixed extraction



trays, including upcomer means, traversing the interior of said shell in a horizontal plane wherein said upper and lower sections are divided by a line parallel to said hydrocarbon feedstock inlet means;

(d) the fixed extraction trays of said second plurality being vertically spaced from each other at a distance of from about ¼ to about ½ greater than the distance separating the fixed extraction trays of said first plurality.

4,336,107

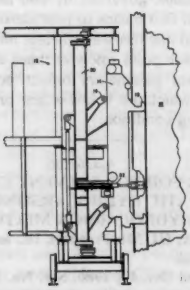
ALIGNING DEVICE

Rodney C. Irwin, Monroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1981, Ser. No. 298,788

Int. Cl.³ B61L *15/00, 25/02;* **C10B** *33/00, 47/00*

U.S. Cl. 202—239 **16 Claims**



1. A device for aligning rail mounted equipment with a track-side structure comprising:

(a) a piston and cylinder combination having a rod projecting from the piston toward the track-side structure and having at the terminal end of said rod an aligning projection which is engageable with an aligning plate mounted adjacent the track-side structure;

(b) means for expanding said piston and cylinder combination so as to extend the rod to a point where the aligning projection engages the aligning plate;

(c) means for compressing said piston and cylinder combination so as to withdraw the rod from the point where the aligning projection engages the aligning plate;

(d) control means for alternatively activating either said means for expanding the piston and cylinder combination or said means for compressing said piston and cylinder combination;

(e) a limit switch connection with said control means such that said means for compressing the piston and cylinder combination is activated when said limit switch is tripped; and

(f) a limit switch operating bar mounted adjacent said rod so as to be moveable therewith and having thereon a rearward trip positioned so as to trip the limit switch as the aligning projection engages the aligning plate, such that after the means for expanding the piston and cylinder combination have been employed to extend the rod to the point where the aligning projection engages the aligning plate, the means for compressing said piston and cylinder combination will then withdraw the rod.

4,336,108

CLOSURE ASSEMBLY FOR HORIZONTAL-CHAMBER COKING OVENS

Kurt Dix, Auf dem Knust 25, 4630 Bochum 1, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,203

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951682

Int. Cl.³ C10B *25/06*

U.S. Cl. 202—248 **11 Claims**

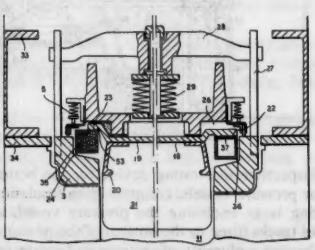
1. A closure for a horizontal coke oven comprising:

a door frame adapted to surround an opening at the end of a coking chamber;

a door shiftable to open and close said opening and adapted to be latched relative to said door frame, said door being formed with a door plug passing with clearance through said door frame in a closed position of the door and fitting into said opening;

a flexible seal on said door engaging said door frame whereby said door and said frame form a gas-collection space inwardly of said seal; and

a hot body mounted on said door and disposed in said space and of a heat capacity sufficient to maintain the temperature in the region of said space during filling of said chamber and coking therein above the condensate forming temperatures, said hot body being a thin-wall hollow hot



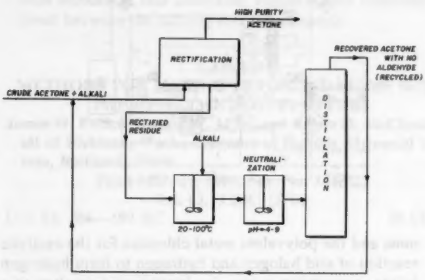
frame of rectangular cross section surrounding said plug and received at least in part in an L-shaped recess of said door frame, to define in said space a gas-collection passage having two right-angle bends in cross section, said hot frame being filled with a material of high heat-storage capacity and heat-radiating effectiveness.

4,336,109

METHOD FOR THE RECOVERY OF ACETONE

Hirokazu Hosaka, Ibaraki; Kenji Tanimoto, Ichihara; Kunihiko Tanaka, Toyonaka; Toshiharu Morita, Yao; Katsuyuki Shiota, Toyonaka; Yuji Ueda, Izumi, and Seiichi Kai, Daito, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 19, 1980, Ser. No. 151,530
Claims priority, application Japan, May 25, 1979, 54-65151
Int. Cl.[3] B01D 3/34; C07C 49/08
U.S. Cl. 203—34 5 Claims



1. A method for the recovery of substantially aldehyde-free acetone from an aqueous rectification residue obtained as the bottoms product after rectification of crude acetone, said crude acetone having been treated with an alkali or an aqueous alkali solution either before or during said rectification, which method comprises mixing said aqueous rectification residue with an alkali at a temperature of 20° to 100° C., neutralizing the mixture to a pH of 4 to 9 and then subjecting the resulting mixture to further distillation to obtain acetone as distillate.

4,336,110

SEPARATION OF BENZENE FROM CYCLOHEXANE

Ronald A. Reimer, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 5, 1981, Ser. No. 231,794
Int. Cl.[3] B01D 3/40; C07C 7/08
U.S. Cl. 203—60 3 Claims

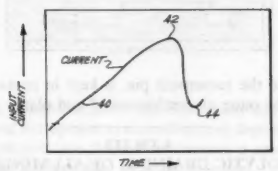
1. A method for reducing the benzene content in an initial stream comprising benzene and cyclohexane which comprises subjecting said stream to distillation in the presence of at least one unsaturated nitrile having 4–6 carbon atoms and recovering a stream enriched in cyclohexane relative to said initial stream as an overhead distillate and a stream enriched in benzene relative to said initial stream as the tails from the distillation in a single liquid phase.

4,336,111

METHOD FOR DETERMINING THE STRENGTH OF A METAL PROCESSING SOLUTION

Donald R. Graunke, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 957,225, Nov. 2, 1978, abandoned. This application Oct. 25, 1979, Ser. No. 88,387
Int. Cl.[3] G01N 27/06
U.S. Cl. 204—1 T 13 Claims



1. A method of measuring the etching rate of a chemical etching solution with respect to a predetermined metal susceptible to etching by said solution, comprising the steps of:

(a) immersing a pair of spaced electrodes in a chemical etching solution capable of oxidizing said predetermined metal in its native form to an oxidized ionic species in solution, at least one of said electrodes being composed of said predetermined metal susceptible to etching by said etching solution;

(b) applying an increasing electrical potential across said spaced electrodes to thereby produce an electric current through said solution between said electrodes; and

(c) monitoring said current to determine the magnitude of the peak current at the point at which said current first begins to decrease as said increasing potential is applied.

7. A method of determining the plating rate of a catalytic electroless metal plating solution comprising the steps of:

(a) immersing a pair of spaced electrodes in a catalytic electroless plating solution, at least one of said electrodes being composed of a metal susceptible to plating by said electroless plating solution;

(b) applying an increasing electric potential across said spaced electrodes to thereby produce a current through said solution between said electrodes; and

(c) monitoring said current to determine the magnitude of the peak current at the point at which said current first begins to decrease as said increasing potential is applied.

4,336,112

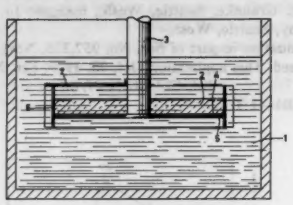
METHOD OF MANUFACTURING MOULDS FOR DISC-SHAPED RECORD CARRIERS, AND MOULDS MANUFACTURED BY MEANS OF SUCH A METHOD

Martinus A. F. Van Hoek, and Jan L. Melse, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,327
Claims priority, application Netherlands, Dec. 10, 1979, 7908858
Int. Cl.[3] C25D 1/10
U.S. Cl. 204—5 4 Claims

1. A method of manufacturing molds for disc-shaped record carriers comprising the steps of suspending a disc-shaped glass plate provided with a central hole in an electroforming bath, at least one surface of which plate is provided with a layer of an information contacting photoresist coated with a vapor deposited silver layer, by means of a suspension pin containing the edge of said central hole, applying current to said silver layer through said suspension pin until said mold is electroformed and then removing the resultant electroformed mold from said

bath, characterized in that during the application of the current to the silver layer, a current carrying metallic strip, electrically



connected to the suspension pin, is kept in contact with and surrounds the outer circumference of said plate.

4,336,113

ELECTROLYTIC GRAINING OF ALUMINUM WITH HYDROGEN PEROXIDE AND NITRIC OR HYDROCHLORIC ACID

John E. Walls, Annandale; Robert L. Dragon, Hazlet, and Thomas A. Dunder, High Bridge, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Jun. 26, 1981, Ser. No. 277,511

Int. Cl.³ C25D *11/16*; C25F *3/04*

U.S. Cl. 204—17 **12 Claims**

1. A method of treating the surface of a sheet of aluminum or the alloys thereof which comprises electrolytically graining said sheet under electrolyzing conditions in an aqueous solution of nitric acid and/or hydrochloric acid plus from about 1 g/l to about 60 g/l hydrogen peroxide in a sufficient concentration and for a sufficient length of time to provide a finely grained surface topography to said sheet.

4,336,114

ELECTRODEPOSITION OF BRIGHT COPPER

Linda J. Mayer, Denville, and Stephen C. Barbieri, Rutherford, both of N.J., assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Mar. 26, 1981, Ser. No. 247,577

Int. Cl.³ C25D *3/38*

U.S. Cl. 204—52 R **22 Claims**

1. In an aqueous acidic electrolyte containing copper in an amount sufficient to electrodeposit copper on a substrate, the improvement comprising incorporating in the electrolyte a brightening and leveling system in an amount sufficient to produce a bright and level copper deposit comprising a mixture of:

(a) A bath soluble substituted phthalocyanine radical,

(b) A bath soluble adduct of a tertiary alkyl amine with polyepichlorohydrin,

(c) a bath soluble organic divalent sulfur compound, and

(d) a bath soluble reaction product of polyethyleneimine and an alkylating agent which will alkylate the nitrogen on the polyethyleneimine to produce a quaternary nitrogen and wherein said alkylating agent is selected from the group consisting of benzyl chloride, allyl bromide, propane sultone, dimethyl sulfate and wherein the reaction temperature ranges from about room temperature to about 120° C.

4,336,115

ACID BASE PRODUCTION UNIT

Howard W. Selby, III, and Paul C. Melanson, both of Boulder, Colo., assignors to PureCycle Corporation, Boulder, Colo.

Continuation of Ser. No. 86,179, Oct. 18, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,485

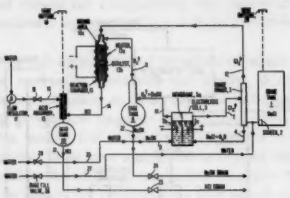
Int. Cl.³ C25B *1/16, 1/26, 15/08*

U.S. Cl. 204—98 **8 Claims**

1. An acid base production system utilizing alkali metal halide salts and water as raw materials comprising:

(a) an electrolysis cell for production of alkali metal hydroxide solution, halogen gas and hydrogen from a solution of said salt in water, comprising a permselective cation-exchange membrane and electrodes disposed on either side of said membrane for supply of direct current to said solution;

(b) a reaction chamber for containing a catalyst selected from the group consisting of the noble metals, silica, alumina and the polyvalent metal chlorides for the catalytic reaction of said halogen and hydrogen to form hydrogen halide, comprising means for heating said catalyst to a temperature such that said reaction proceeds without violent combustion; and



(c) means for absorption of said hydrogen halide in water to produce aqueous acid solution.

4,336,116

POLYADDUCTS CONTAINING UNSATURATED AMIDE GROUPS AND THEIR USE IN COATINGS

Eberhard Schupp, Schwetzingen; Fritz E. Kempter, Mannheim, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,226

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942488

Int. Cl.³ C08G *59/14, 59/28*; C08J *3/28*

U.S. Cl. 204—159.11 **10 Claims**

1. A polyadduct, which possesses nitrogen-basic groups, has a mean molecular weight of from 500 to 10,000, and contains groups, attached to aromatic rings, of the formula (I)

$$-CH_2-NH-\overset{O}{\overset{\|}{C}}-CR^1=CHR^2 \quad (I)$$

where R^1 and R^2 are identical or different and each is hydrogen or methyl, which polyadduct has been prepared from a monophenol and/or polyphenol which possesses groups of the formula (I), a polyepoxide compound and an amine or amine salt.

4,336,117

REFRACTORY COATINGS AND METHOD OF PRODUCING THE SAME

William A. Brainard, Arlington, Va., and Donald R. Wheeler, Bay Village, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 102,003

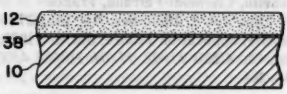
Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 C **5 Claims**

1. In a method of producing a hard coated article of manufacture wherein a titanium carbide coating is deposited on a steel substrate from a radiofrequency sputtering plasma, the improvement comprising

introducing nitrogen into the sputtering environment during

the formation of the interfacial region of the coating at the substrate thereby forming a mixture of titanium nitrides and



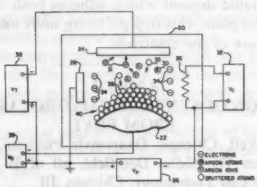
iron nitrides in said interfacial region which improves the bond between the coating and the substrate.

4,336,118

METHODS FOR MAKING DEPOSITED FILMS WITH IMPROVED MICROSTRUCTURES

James W. Patten; Ronald W. Moss, and Edwin D. McClanahan, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Mar. 21, 1980, Ser. No. 131,922
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 EC **30 Claims**



1. A line of sight deposition method comprising:

emitting material from a source spaced apart from a substrate surface;

depositing a first amount of said material on a first region of said surface to form a first deposit having a first deposition characteristic;

simultaneously depositing a second amount of said material, less than said first amount, on a second region of said surface to form a second deposit having a second deposition characteristic including columnar growth defects due to geometric shadowing; and

removing an amount of said deposited material approximately uniformly from said substrate surface including said first and second regions;

the amount removed being less than said first amount, at least as great as said second amount, and sufficient to remove a portion of the deposited material having said second characteristic and to reduce said columnar growth defects.

4,336,119

METHOD OF AND APPARATUS FOR CONTROL OF REACTIVE SPUTTERING DEPOSITION

F. Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 29, 1981, Ser. No. 229,378
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 P **16 Claims**

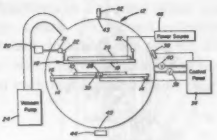
1. A method for controlling the reactive sputtering of an oxide-containing film, comprising the steps of:

establishing an atmosphere having a gas pressure less than about 10^{-1} torr within a coating chamber, said atmosphere comprised of a partial pressure of oxygen and a partial pressure of a chemically inert gas;

sputtering a selected material from a cathode toward a substrate at a constant predetermined electrical power;

monitoring the deposition rate of a film of an oxide of said selected material being formed on said substrate thereby to indicate oxygen partial pressure in the chamber;

monitoring the total gas pressure within said coating chamber; and



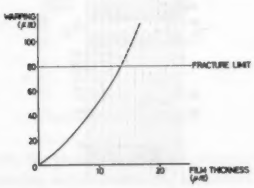
inputting at least oxygen or said chemically inert gas into the chamber in response to said monitored deposition rate and total gas pressure thereby to maintain a constant deposition rate at a constant total gas pressure.

4,336,120

METHOD OF FABRICATING A ZINC OXIDE THIN FILM

Mitsuo Sakakura, Sakado, and Tetsuo Takaku, Tsuru-gashima, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 59,340, Jul. 23, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,578
Claims priority, application Japan, Jul. 21, 1978, 53-89163
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 SP **6 Claims**



1. A method of fabricating a zinc oxide thin film by a sputtering process comprising the step of sputtering, in an oxygen atmosphere, a dopant selected from the group consisting of boron, magnesium, silicon, gallium and germanium together with zinc onto a glass substrate to produce a zinc oxide thin film containing an amount of dopant effective to reduce the internal stress of said thin film sufficient to prevent fracture of the glass substrate at film thicknesses of up to 20 μm.

4,336,121

APPARATUS FOR MEASURING ELECTROCHEMICAL ACTIVITY

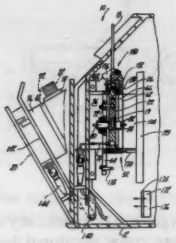
Steven E. Enzer, Brooklyn; Robert J. Sarrine, and William L. Wilfong, both of Ann Arbor, all of Mich., assignors to Transidyne General Corporation, Ann Arbor, Mich.

Filed Dec. 15, 1980, Ser. No. 216,461
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—195 R **6 Claims**

1. In an apparatus for sensing electrochemical activity of a liquid sample in a receptacle, said apparatus including heater means for heating the liquid to a predetermined temperature, the improvement wherein said heater means comprises:

first means having a relatively low thermal mass in contact

with the receptacle for quickly bringing the liquid to said predetermined temperature; and



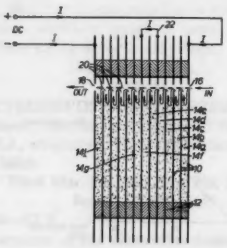
second means for heating the air surrounding the receptacle to said predetermined temperature.

4,336,122

ELECTROLYSIS APPARATUS

Ernst Spirig, CH-8640 Rapperswil, Switzerland

Filed Sep. 8, 1980, Ser. No. 185,027
Int. Cl.³ C25B *15/08, 9/04, 13/00, 11/02*
U.S. Cl. 204—222 **36 Claims**



11. An electrolysis apparatus, comprising

(a) a plurality of parallel spaced electrode plates defining an assembly of serially arranged cells having a current flow path and a gas and electrolyte flow path, said cells including at least one cooling cell arranged downstream of a series of gas generating cells; and

(b) vibrating transducer means mounted on at least one of said plates for vibrating said gas generating cells to promote the release of gas from its electrodes.

4,336,123

ELECTROLYTIC APPARATUS UTILIZING A TRANSITION METAL-GRAPHITE INTERCALATION COMPOUND CATHODE

Donald W. DuBois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 165,995, Jul. 7, 1980, Pat. No. 4,282,074. This application Feb. 12, 1981, Ser. No. 233,735
Int. Cl.³ C25B *9/00, 11/04, 11/12*
U.S. Cl. 204—252 **16 Claims**

1. In an electrolytic cell for the electrolysis of aqueous electrolytes having an anode, a cathode, and an electrolyte impermeable, cation permeable permionic membrane comprising fluorocarbon polymer having cation selective groups pendant thereto therebetween, the improvement wherein the cathode comprises an intercalation compound comprising graphite and a transition metal component.

4,336,124

ELECTRODES WITH CURRENT OUTLETS

Francois Gerard, and Jean-Yves Machat, both of Clermont-Ferrand, France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 7, 1980, Ser. No. 166,027
Claims priority, application France, Jul. 16, 1979, 79 18549
Int. Cl.³ C25B *11/02, 11/04;* **H01M** *4/00*
U.S. Cl. 204—284 **19 Claims**

1. An electrode comprising, on the one hand, at least one body formed at least in part of an electron-conductive porous skeleton, and, on the other hand, at least one current outlet comprising at least one electron-conductive plate with roughnesses which penetrate into the skeleton, characterized by the fact that:

the plate is firmly connected to the skeleton by an electrolytic metallic deposit which adheres both to the skeleton and to the plate, this deposit being inert under the conditions of use of the electrode.

4,336,125

PRODUCTION OF SYNTHETIC HYDROCARBON FUELS FROM PEAT

Sanford A. Weil, Chicago; Dharamvir Punwani, Bolingbrook, and William W. Bodle, Deerfield, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 59,131, Jul. 20, 1979, Pat. No. 4,263,125. This application Mar. 6, 1981, Ser. No. 241,386
Int. Cl.³ C10G *1/00;* **C10B** *47/00, 51/00, 47/24*
U.S. Cl. 208—8 R **40 Claims**

1. A process for production of synthetic hydrocarbon fuels from peat comprising:

providing wet peat to a fluidized bed peat drier for substantial drying;

passing substantially dry peat from said fluidized bed peat drier to a hydropyrolysis zone, the mean temperature of said hydropyrolysis zone maintained at about 1000° to about 1400° F. to increase liquid hydrocarbon yield suitable for gasoline blending feedstock and fuel oil;

passing peat char from said hydropyrolysis zone to a fluidized bed char gasifier zone, introducing steam and oxygen to said char gasifier zone and maintaining a mean temperature of said char gasifier zone of above about 1700° F. and below the sintering temperature of the char, the gases from said char gasifier zone passing directly to said hydropyrolysis zone; and

passing gases and contained vapors from said hydropyrolysis zone through said peat drier providing fluidization for said fluidized bed peat drier and then removing said gases and contained vapors for separation of liquid and gaseous hydrocarbon synthetic fuels.

4,336,126

PROCESS FOR BURNING RETORTED OIL SHALE AND IMPROVED COMBUSTOR

Corey A. Bertelsen, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

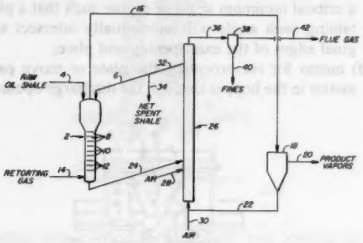
Filed Mar. 23, 1981, Ser. No. 246,555
Int. Cl.³ C10G *1/00, 1/02*
U.S. Cl. 208—11 R **7 Claims**

1. In a process for retorting oil shale using a heat transfer material heated by burning retorted oil shale containing residual carbonaceous material, wherein said retorted oil shale contains both fine and coarse grained material and at least part

of said fine grained material is contained in a separate feedstream from the coarse grained material, an improved process for burning the oil shale comprising:

(a) burning at least part of the residual carbonaceous material in the fine grained material present in said separate feedstream in a fine preburner by entraining said fine particles in first entraining gas stream containing oxygen and having a velocity greater than the terminal velocity of the fine particles;

(b) burning part of the carbonaceous residue in the coarse



grained material in a coarse preburner containing less than a stoichiometric amount of oxygen;

(c) mixing the entrained partially burned fine grained material from the fine preburner and the partially burned coarse grained material from the coarse preburner in a second entraining gas stream having a velocity greater than the terminal velocity of the mixture of fine and coarse particles and containing at least a stoichiometric amount of oxygen; and

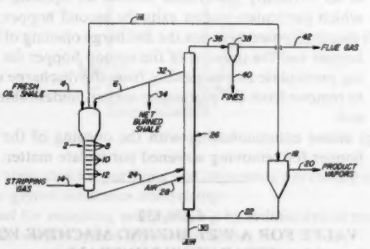
(d) burning the carbonaceous residue remaining in the entrained fine and coarse grained material in a vertical combustion zone through which the entraining gas is directed.

4,336,127

STAGED BURNING OF RETORTED CARBON-CONTAINING SOLIDS

Corey A. Bertelsen, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 26, 1981, Ser. No. 267,137
Int. Cl.³ C10G *1/00, 1/02*
U.S. Cl. 208—11 R **8 Claims**



1. A process for burning pyrolyzed solids containing a carbonaceous residue to provide heat for the pyrolysis of a particulate carbon-containing solid, wherein said pyrolyzed solids contain both a fine fraction and a coarse fraction and at least part of said fine fraction is contained in a separate feedstream from the coarse fraction of the pyrolyzed solids, said process comprising:

(a) burning at least part of the carbonaceous residue in the fine fraction contained in said separate feedstreem in a dilute phase preburner by entraining the fine fraction in a first entraining gas stream containing oxygen and having a velocity greater than the terminal velocity of the particles in the fine fraction;

(b) mixing the entrained, partially burned fine fraction from the preburner with the remainder of the pyrolyzed solids in a second entraining gas stream having a velocity greater than the terminal velocity of the coarse and fine fractions; and

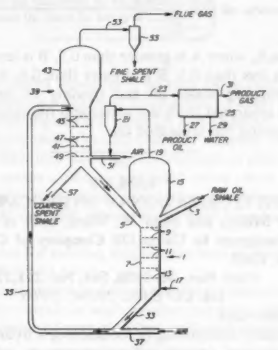
(c) burning the unburned carbonaceous residue in the fine and coarse fractions in a second dilute phase combustion zone through which the second entraining gas and entrained solids are directed, said second dilute phase combustion zone containing sufficient oxygen to burn all of the unburned carbonaceous residue in the fine and coarse fractions.

4,336,128

COMBUSTION OF PYROLYZED CARBON CONTAINING SOLIDS IN STAGED TURBULENT BED

Paul W. Tamm, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 1, 1981, Ser. No. 268,938
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—11 R **12 Claims**



1. A process for producing heat from particulate pyrolyzed carbon containing solids containing a mixture of various size particles which comprises the steps of:

(a) introducing the pyrolyzed carbon containing solids into the upper portion of a generally vertically oriented dense phase combustion zone through which the solids pass downward as a continuous moving bed of material, said dense phase combustion zone being characterized by the presence of a plurality of dispersing elements so disposed as to limit gross vertical backmixing of the solids passing downward therethrough;

(b) burning the carbonaceous material remaining on the pyrolyzed solids as they move downward through the dense phase combustion zone by introducing an oxidizing gas into the bottom of the dense phase combustion zone and withdrawing combustion gases from the upper portion of the zone;

(c) passing the flow of oxidizing gas in a generally countercurrent manner to the downward moving solids at a velocity sufficient to entrain a fine fraction of ash particles below a preselected size, sufficient to fluidize an intermediate size fraction, and insufficient to entrain or fluidize a coarse fraction, whereby the fine fraction is carried upward with the flow of gas as entrained particles and the intermediate and coarse fractions pass downward; and

(d) withdrawing the entrained fine fraction with the gas leaving the upper portion of the dense phase combustion zone and separately withdrawing the intermediate and coarse fractions from the lower part of the dense phase combustion zone.

4,336,129

METHOD FOR TREATING A WATER-CONTAINING WASTE OIL

Tokuo Yoshimura, Kitakyushu; Hiroshi Okazaki, Fukuoka; Mahito Soeda, Onga, and Takeharu Yushima, Kitakyushu, all of Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo and Shinnikka Environmental Engineering Co., Ltd., Fukuoka, both of, Japan

PCT No. PCT/JP79/00107, § 371 Date Mar. 4, 1980, § 102(e) Date Mar. 4, 1980, PCT Pub. No. WO80/02432, PCT Pub. Date Nov. 13, 1980

PCT Filed May 1, 1979, Ser. No. 217,324

Int. Cl.[3] C10M *11/00;* C10G *33/04*

U.S. Cl. 208—180 21 Claims

1. A method for treating a water-containing waste oil comprising oils, water, and solid constituents in which the water is present in a water-in-oil emulsion, which comprises adding to the water-containing waste oil having an aromatic oil ratio A at least 1% by weight, on the basis of the weight of the water-containing waste oil, of a treating oil having an aromatic oil ratio B in which the values of the aromatic oil ratios, A and B, are determined by the following formula:

$$\text{Aromatic oil ratio} = \frac{\text{Weight of aromatic oil content}}{\text{Weight of total oil content}}$$

and in which, when A is greater than 0.5, B is less than 0.4 and, when A is less than 0.5, B is greater than 0.6, whereby in the water-containing waste oil and treating oil mixture the oil content is separated from the water and the solid constituents, and recovering the separated oil.

4,336,130

DESULFURIZATION OF HYDROCARBONS

J. Wayne Miller, and John W. Ward, both of Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 28, 1980, Ser. No. 211,376

Int. Cl.[3] C10G *29/04, 29/06*

U.S. Cl. 208—243 24 Claims

1. A process comprising (a) contacting a hydrocarbon feedstock containing organo-sulfur compounds with a reduced catalytic absorbent comprising one or more nickel components a molybdenum or tungsten component and one or more platinum group metal promoters composited with a porous refractory oxide, said contacting being under substantially non-hydrogenative conditions including an elevated temperature such that a substantial proportion of said organo-sulfur compounds is removed from said feedstock and said catalytic absorbent increases in sulfur content; and (b) recovering a hydrocarbon product stream containing less organo-sulfur compounds than are contained in said feedstock.

4,336,131

GASIFICATION FURNACE WITH DISCHARGE HOPPER

H. Dean Schmidt, Sylvania, and Peter M. Eckstrom, Toledo, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 945,248, Sep. 25, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,298

Int. Cl.[3] B03B *1/02*

U.S. Cl. 209—3 5 Claims

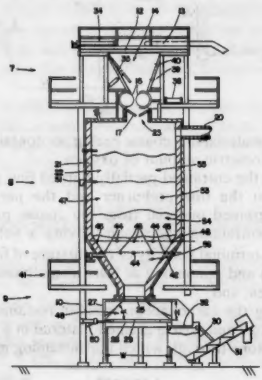
1. A furnace comprising:

(a) a vertically elongated chamber for holding material charged thereto and in which the material is reduced to particulate matter, the chamber being funnel-shaped adjacent the vertically lowermost bottom thereof and having an exit opening which is horizontally disposed and defined by at least one marginal edge and through which particulate matter leaves the chamber;

(b) means for charging material to the chamber;

(c) a first box-like hopper disposed vertically below the exit opening for receiving particulate matter which falls, by gravity, from the chamber through the exit opening onto a horizontally disposed plate which is defined by at least one marginal edge and which covers the vertically lowermost hopper bottom connecting a pair of horizontally spaced opposing ends, one of which ends has a vertically disposed discharge opening adjacent the plate in horizontal spaced relation from the exit opening of the chamber into the hopper, the vertical height (H) of the hopper and the dimensions of the plate being correlated to each other such that when particulate matter on the plate blocks the exit opening, the particulate matter on the plate will be at a critical minimum angle of repose such that a plane containing such angle will substantially intersect said marginal edges of the exit opening and plate;

(d) means for reciprocating the plate to move particulate matter in the hopper through the discharge opening out of



the hopper, wherein material in said chamber is above a predetermined derived level thereby allowing more particulate matter in the chamber to fall into the hopper;

(e) a second hopper disposed adjacent the discharge opening of the first hopper for receiving particulate matter which falls, by gravity, from the first hopper after it passes through the discharge opening, the second hopper having at its vertically lowermost bottom an opening through which particulate matter exits the second hopper;

(f) means disposed between the discharge opening of the first hopper and the opening of the second hopper for screening particulate matter passing from the discharge opening to remove from the particulate matter, undesirable debris; and

(g) means communicating with the opening of the second hopper for removing screened particulate matter.

4,336,132

VALVE FOR A WET JIGGING MACHINE FOR SEPARATING MINERALS

Friedhelm Huebner, and Karl-Heinz Weiffen, both of Bochum-Riemke, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,150

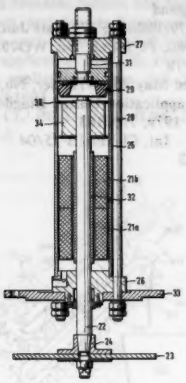
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940568

Int. Cl.[3] B03B *5/24*

U.S. Cl. 209—500 19 Claims

1. In a wet settling machine for separating mineral mixtures in which a separating liquid is caused to pulsate by the cyclic opening and closing of disk valves driven by electromagnets each of which valves includes a valve disc carried on a valve shaft and an electromagnet, the improvement wherein:

said electromagnet and said shaft are mounted for direct electromagnetic driving of said shaft;



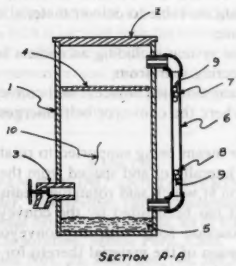
a damping mass carried on said shaft; and resilient means mounted to be struck by said damping mass at a point displaced from said disc as said shaft travels toward said point.

4,336,133

ETHYLENE GLYCOL ANTIFREEZE REPURIFICATION APPARATUS

Robert C. Johnson, 808 N. Powell Rd., Essexville, Mich. 48732

Filed Nov. 25, 1980, Ser. No. 210,400
Int. Cl.[3] B01D *21/02*
U.S. Cl. 210—95 2 Claims



SECTION A-A

1. An apparatus for purifying and dispensing previously used ethylene glycol antifreeze comprising:

a vessel for receiving and purifying by sedimentation previously used ethylene glycol antifreeze;

sump means located at the bottom of said vessel for collecting sediment from said previously used antifreeze;

a spigot located above said sump means for dispensing thus purified antifreeze;

a transparent view tube affixed to and in fluid communication with said vessel, said view tube indicating the level of fluid in said vessel;

a plurality of varied density indicator balls located within said transparent view tube, said indicator balls being capable of indicating the level of freeze protection of antifreeze in said vessel; and

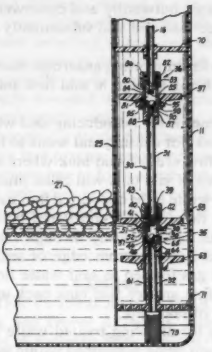
screen means located within said view tube for preventing the indicator balls from entering the vessel.

4,336,134

FLOAT-ACTUATED LEVEL CONTROL VALVE

William C. Prior, Newbury, Ohio, assignor to Kinetico, Inc., Newbury, Ohio

Filed May 5, 1980, Ser. No. 146,217
Int. Cl.[3] C02B *1/22*
U.S. Cl. 210—127 12 Claims



1. A float-actuated liquid level control valve comprising:

(a) means forming a chamber having spaced apart ports that can establish liquid flow through said chamber,

(b) valve check means in said chamber adapted to establish one-way flow into said chamber through at least one port,

(c) magnet means coacting with said valve check means in one position to prevent said valve check means from closing said one port against liquid flow out of said chamber, and

(d) float means for moving said magnet means in response to changes of liquid level,

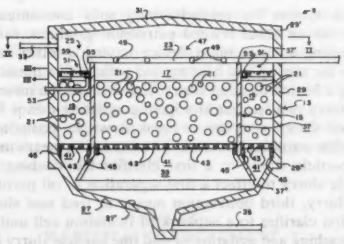
(e) said magnet means including a magnet connected to said float means outside of said chamber and a magnet follower movable inside of said chamber with said magnet.

4,336,135

SUBMERGED ANAEROBIC FILTER WASTE TREATMENT APPARATUS

Richard H. Price, 161 Jefferson Ave., Memphis, Tenn. 38103

Filed Jul. 21, 1978, Ser. No. 926,918
Int. Cl.[3] B01D *21/02*
U.S. Cl. 210—151 10 Claims



1. An anaerobic waste treatment apparatus for removing organic matter from waste, said apparatus comprising:

(a) a tank including a substantially closed bottom and a continuous side wall having a bottom edge attached to said substantially closed bottom and having a top edge, said tank having an interior, said interior being divided into first and second areas;

(b) cylinder means for dividing said interior of said tank into

said first and second areas, said cylinder means being opened and including a continuous side wall having a top edge and a bottom edge, said continuous side wall of said cylinder means being spaced inwardly from said continuous side wall of said tank to divide said interior of said tank into said first area located inside of said continuous side wall of said cylinder means and into said second area located outside of said continuous side wall of said cylinder means, said bottom edge being flared outwardly and downwardly towards said continuous side wall and said substantially closed bottom of said tank;

(c) media means for supporting anaerobic bacteria growth, said media means being located in said first and second areas of said tank;

(d) distribution means for introducing said waste into said first area of said tank, for causing said waste to flow downwardly through said first area of said tank where said media means in said first area of said tank will cause much of said organic matter in said waste to be converted into gas, and for causing said waste to flow around said flared bottom edge of said cylinder means and upwardly through said second area of said tank, said flared bottom edge of said cylinder means directing said gas formed as said waste flows downwardly through said first area of said tank back upwardly through said first area of said tank;

(e) outlet means for allowing treated waste to exit said tank, said outlet means being positioned within said second area of said tank above said media means.

4,336,136

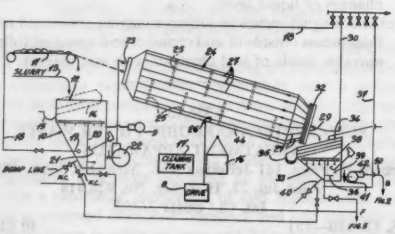
SYSTEM FOR PROCESSING SOILS CONTAMINATED BY CRUDE OILS OR OTHER REFINED PETROLEUM PRODUCTS

Marcel L. Giguere, 2330 rue Nicolas, Brossard, Quebec, Canada

Filed Jun. 2, 1980, Ser. No. 155,190

Int. Cl.[3] B01D *35/18*; C02F *1/40*

U.S. Cl. 210—178 **17 Claims**



1. A system for reconditioning soils contaminated with crude oils or other refined petroleum products, said system comprising a mixer input device having a mixer and heater means for mixing and heating said soils with a liquid and providing a heated blended slurry, first convection means to feed said slurry to a sparger kiln having agitating means for agitating said slurry whereby to break down its component parts into a fine particle slurry, second convection means to feed said fine particle slurry to a first clarifier for washing said fine particle slurry to effect a first separation of oil particles from said slurry, third convection means to feed said slurry from said first clarifier to a network of floatation cell units for further washing and agitating of said fine particle slurry from said clarifier to effect a second separation of oil particles from said fine particle slurry, reagent feed means associated with said floatation cells to effect said oil separation, fourth convection means to feed separated oil particles from said floatation cells to an aeration clarifier having a liquid flow means to further separate oil particles from a liquid mixture containing said oil particles from said floatation cells and collecting means to recover said oil particles separated at said first clarifier and aeration clarifier.

4,336,137

SCAVENGING APPARATUS

Edward V. Byers, 17 Cavendish Crescent North, The Park, Nottingham, England

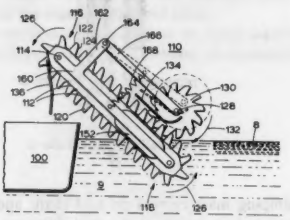
PCT No. PCT/GB79/00085, § 371 Date Jan. 26, 1980, § 102(e) Date Jan. 24, 1980, PCT Pub. No. WO79/01135, PCT Pub. Date Dec. 27, 1979

PCT Filed May 25, 1979, Ser. No. 189,954

Claims priority, application United Kingdom, May 26, 1978, 23672/78; Feb. 21, 1979, 7906163

Int. Cl.[3] E02B *15/04*

U.S. Cl. 210—242.3 **14 Claims**



1. Scavenging apparatus for removing material from a surface zone of a body of water, comprising:

a support vessel;

an elongate conveyor system extending from a location outside the vessel to a location inboard of the vessel, said conveyor system having an outer end portion disposed below the surface zone and an upwardly rising portion extending therefrom to rise through the surface zone and upwardly toward the inboard location, said conveyor system being movable to deliver material collected at the surface zone;

said conveyor system including an endless belt having stiff teeth projecting therefrom;

rotatable means mounted adjacent said conveyor system at a location where the conveyor belt emerges from said surface zone;

said rotatable means being supported to rotate about an axis extending laterally of and spaced from the conveyor belt at a position at which said rotatable means engages material after it has been lifted by the conveyor system and forms a coaction zone with the conveyor belt teeth to cause adhesion of the material thereto for conveyance of the material inboard of the vessel;

scraper means cooperating with said conveyor system to aid in removing adhering material therefrom for discharge inboard of said vessel;

a support structure for said rotatable means, said rotatable means having an axle which is carried by said support structure and about the axis of which said rotatable means rotates, and said support structure including means allowing displacement of said axle toward and away from said conveyor system; and

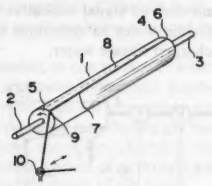
said conveyor belt comprising a plurality of pivotally linked transverse slats, each slat having an oleophilic outer surface from which projects a lateral row of spaced plate-like members, said scraper means comprising a comb structure interleaved with longitudinal rows of conveyor teeth to scrape material from the side surfaces of said plate-like members and the surfaces of said slats between the members.

4,336,138

PERMEATION SEPARATION APPARATUS

Tsukasa Taniyama; Masaaki Sekino, and Michimasa Kishimoto, all of Otsu, Japan, assignors to Toyobo Co., Ltd., Japan

Continuation-in-part of Ser. No. 708,970, Jul. 26, 1976, abandoned. This application Mar. 10, 1978, Ser. No. 885,411
Claims priority, application Japan, Jul. 26, 1975, 50/91446; May 26, 1976, 51/61602
Int. Cl.³ B01D *31/00*; B29C *27/14*
U.S. Cl. 210—321.4 3 Claims



1. A permeation separation apparatus furnished with an assembly consisting essentially of a multiplicity of continuously hollow fibers which have a selective permeability to fluid, said hollow fibers being arranged on the surface of a core so as to constitute multiple layers of the hollow fiber lines wherein the hollow fiber lines are disposed in mutually and up- and downwardly intersecting relations and are crossed two or more adjacent layers, said each layer having a thickness equal to the diameter of a piece of hollow fiber, with a resin wall provided at at least one terminal of said hollow fiber layers, each of said hollow fiber lines thrusting through at least one resin wall in a fluid-sealing condition to provide an opening outward, and said hollow fiber being disposed so as to satisfy the formula:

$$\pi D/10L \leqq \tan B \leqq 3\pi D/4L$$

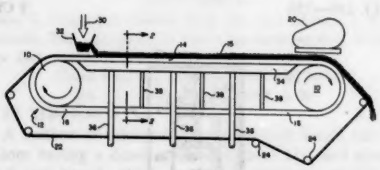
wherein B is an angle between a line of said hollow fiber and a straight line which is parallel with the central axis of said core on the surface of a cylindrical body which includes said hollow fiber and has common central axis with said core; D is a diameter of said cylindrical body; and L is a length of said hollow fiber layer in an axial direction.

4,336,139

VACUUM PAN RAISING AND LOWERING SYSTEM

Max A. Mueller, Centerville; Dirk Vandertoolen, Salt Lake City, and Gerald Minear, Centerville, all of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Nov. 24, 1980, Ser. No. 209,937
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—401 3 Claims



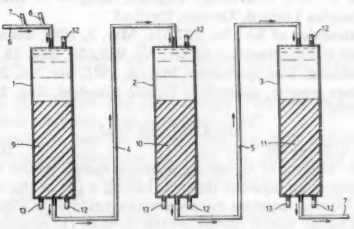
1. A machine for filtering slurry comprising:
(a) a frame;
(b) two drums mounted to said frame for rotation and spaced apart from one another;
(c) an endless, perforated drainage belt entrained around said two drums to define a substantially horizontal drainage surface on the upper run of said drainage belt between said two drums;
(d) means to drive said endless drainage belt;
(e) a vacuum pan located below the drainage surface to apply vacuum to material on the drainage surface; and
(f) raising and lowering means coupled to said vacuum pan to selectively raise said vacuum pan into sealing engagement with said drainage belt and to selectively lower said vacuum pan away from said drainage belt; said raising and lowering means including at least two channels mounted in parallel relationship to the frame under the upper run to extend downwardly away from the upper run, a drive screw rotatably mounted within each channel, means for selectively and synchronously rotating said screws, and means for operatively connecting the vacuum pan to both of said screws in a precise upright orientation adapted to cause the vacuum pan to form a seal along its length with the drainage belt when in its raised position, said connecting means including slide members that are slidably engaged upon said channels.

4,336,140

WATER PURIFICATION PROCESS

Joseph H. Smith, and Trevor A. Peploe, both of London, England, assignors to Permutit-Boby Limited, Laverstoke Mill, England

Continuation-in-part of Ser. No. 963,712, Nov. 27, 1978, abandoned. This application Sep. 12, 1980, Ser. No. 186,921
Claims priority, application United Kingdom, Nov. 30, 1977, 49770/77; Oct. 7, 1978, 39714/78; Australia, Mar. 24, 1980, 56783/80
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—677 10 Claims



1. A process of purifying water including sulfates and chlorides having a solids content below 10 mg/l by ion exchange comprising passing the water through a bed of cation exchange resin and then through a bed of anion exchange resin and then through a final bed of cation exchange resin, the particle size of the resin in each bed being between 0.5 and 1.2 mm, in which process each bed is less than 75 cm deep, the flow rate through each bed is above 120 meters per hour, and the cation and anion exchange resins are regenerated separate from each other, thereby producing purified water having a dissolved solids content of below 5 μg/l.

4,336,141

WASTEWATER TREATMENT

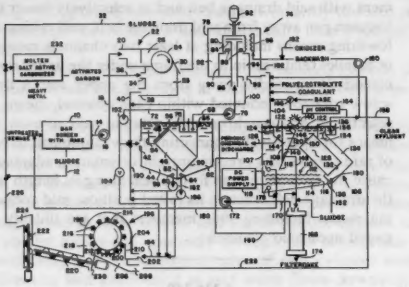
Scott A. Santora, Hammonton, N.J., assignor to Waste Conversion Technology, Inc., Camden, N.J.

Division of Ser. No. 6,271, Jan. 25, 1979, Pat. No. 4,251,367. This application Feb. 2, 1981, Ser. No. 230,710
Int. Cl.³ C02F *1/28*
U.S. Cl. 210—694 2 Claims

1. A wastewater treatment process comprising the steps of: introducing wastewater into a vessel and effecting at least partial separation of carbon from said wastewater therein by at least one of the processes of settlement and flotation;

removing wastewater from a location in said vessel having a low activated carbon content and passing part of said removed wastewater through fine particle screening means;

introducing activated carbon into said vessel through a path which bypasses the fine particle screening means;



returning carbon removed by said screening means to said vessel through a return path; and

removing from said vessel carbon separated from the wastewater therein and disposing of the carbon so removed from the vessel through a path different from said return path.

4,336,142

REMOVAL OF HEAVY METALS WITH GAMMA DICALCIUM SILICATE

Gerald C. Bye, Gravesend, England, assignor to Blue Circle Industries Limited, London, England

Continuation of Ser. No. 127,031, Mar. 3, 1980, abandoned, which is a continuation of Ser. No. 933,620, Aug. 14, 1978, abandoned. This application Mar. 4, 1981, Ser. No. 240,568

Claims priority, application United Kingdom, Aug. 25, 1977, 35692/77

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—724 **10 Claims**

1. A method of removing a heavy metal, whose ions are insoluble in an aqueous medium having a pH in the range of 7–11, from an aqueous system contaminated with ions of said heavy metal, which comprises the steps of (1) contacting the heavy metal ions in the aqueous system with an amount of gamma dicalcium silicate effective to establish a final pH in the aqueous system in the range of 7–11 and to insolubilize said heavy metal present, and (2) separating the insolubilized heavy metal from the aqueous system.

4,336,143

CONTROLLING THE TREATMENT OF MIXTURES COMPRISING SOLID AND LIQUID

John Abbott, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Aug. 11, 1980, Ser. No. 177,038

Claims priority, application United Kingdom, Sep. 21, 1979, 7932781

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—740 **4 Claims**

1. A method of controlling treatment apparatus for removing water from a water/solids mixture, comprising the steps of:

(a) determining the volume flow rate of untreated water/solids mixture,

(b) deriving a signal indicative of said determined volume flow rate of untreated mixture,

(c) integrating said derived signal to determine the cumulative volume of untreated mixture fed for treatment,

(d) determining the density of the untreated water/solids mixture,

(e) deriving a signal indicative of said determined density,

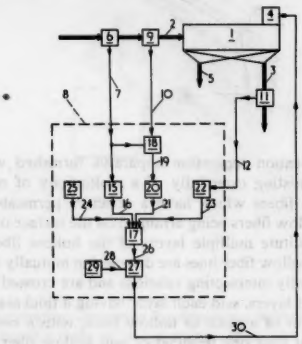
(f) multiplying both said derived signals to derive a signal indicative of the mass flow rate of the untreated water/solids mixture fed for treatment,

(g) integrating the derived signal indicative of the mass flow rate of the untreated mixture to determine the cumulative mass of the untreated mixture fed for treatment,

(h) determining the volume flow rate of filtrate water discharging from the mixture under treatment,

(i) deriving a signal indicative of said determined volume flow rate of filtrate water,

(j) integrating said derived signal indicative of the volume flow rate of filtrate water to determine the cumulative volume of discharged filtrate water,



(k) processing said derived signals indicative of the cumulative volume of untreated mixture fed for treatment, of the cumulative mass of untreated mixture fed for treatment, and of the cumulative volume of discharged filtrate water to derive a signal indicative of the moisture content of the mixture undergoing treatment,

(l) comparing the derived signal indicative of the moisture content of the mixture undergoing treatment with a preset signal indicative of a desired moisture content of the treated mixture, and

(m) terminating the treatment when the derived signal indicative of the moisture content of the mixture undergoing treatment reaches said preset signal indicative of the desired moisture content of the treated mixture.

4,336,144

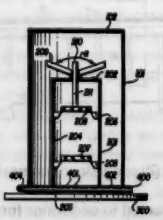
METHOD FOR MIXING GASES WITH LIQUIDS

Grover C. Franklin, Jr., 2250 Warmouth St., San Pedro, Calif. 90732

Division of Ser. No. 18,054, Mar. 6, 1979, Pat. No. 4,272,461. This application Jan. 15, 1981, Ser. No. 225,328

Int. Cl.³ B01F *3/04*

U.S. Cl. 210—758 **8 Claims**



1. A process of aerating a body of liquid comprising:

placing vertically in said liquid an apparatus for mixing gas with liquid, said apparatus comprising:

(a) an inner cylindrical member comprising an elongated tube having upper and lower ends and a plurality of turbines, which are free to rotate about the longitudinal axis thereof mounted within the tube, the turbines being spaced apart from one another and so constructed that adjacent turbines have different rotational direction or velocity, the tube having a solid, imperforate wall;

(b) an outer cylindrical member comprising an elongated tube having upper and lower ends and a plurality of openings in the lower half of the tube wall, the outer and inner cylindrical members being arranged in a concentric manner;

(c) a base member, to one surface of which the lower ends of the inner and outer cylindrical members are attached so that the lower ends are completely sealed; and

(d) a gas inlet pipe for introducing gas bubbles into the lower end of at least one of the cylindrical members; and supplying a sufficient amount of air to said gas inlet pipe to cause aeration and pumping of the liquid.

4,336,145

LIQUID GEL CONCENTRATES AND METHODS OF USING THE SAME

James E. Briscoe, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 12, 1979, Ser. No. 57,099

Int. Cl.³ E21B *43/26*

U.S. Cl. 252—8.55 R **25 Claims**

1. A liquid gel concentrate comprising: water;

hydroxypropyl guar hydratable polymer which yields viscosity upon hydration present in said concentrate in an amount of from about 700 to about 900 lbs/1000 gals. of water;

sodium hydroxide present in said concentrate in an amount sufficient to produce a concentrate pH in the range of from about 9 to about 14; and

sodium tetraborate inhibitor having the property of reversibly reacting with said hydratable polymer whereby the rate of hydration of said polymer is retarded at one condition to produce a concentrate effective storage life in the range of about 1–90 days and said reaction is reversed at another condition, said inhibitor being present in said concentrate in an amount of from about 6 to about 12 lbs/1000 gals. of water.

4,336,146

METHOD OF THICKENING HEAVY BRINE SOLUTIONS

Thomas G. Majewicz, Chadds Ford, Pa., and Thomas J. Podlas, Newark, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 25, 1980, Ser. No. 180,743

Int. Cl.³ E21B *43/00*; C09K *3/00*

U.S. Cl. 252—8.55 R **4 Claims**

1. A method of thickening heavy calcium halide salt brine solutions having a density between about 11.5 and about 19 pounds per barrel which comprises dissolving therein, per barrel of brine, about 0.5 to 2 lbs. of a cellulose derivative selected from the class consisting of hydroxyethyl cellulose having a hydroxyethyl M.S. of about 0.2 to 1.2 and methyl cellulose having methyl D.S. of about 0.2 to 0.8, said cellulose derivative being soluble in tap or distilled water to the extent of less than 1% by weight.

4,336,147

BORATE-CONTAINING WATER-IN-OIL MICROEMULSION FLUID

Robert A. Stayner, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 24, 1980, Ser. No. 132,920

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.5 **4 Claims**

1. A water-in-oil microemulsion fluid consisting essentially of:

(a) 30 to 50 percent by mass water;

(b) 35 to 70 percent by mass of a mineral oil; and

(c) 3.0 to 15.0 percent by mass of a potassium borate having a boron-to-potassium metal ratio of 2.5 to 4.5.

4,336,148

COMPLEX COMPOUND, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,172

Claims priority, application Switzerland, Sep. 7, 1977, 10946/77

Int. Cl.³ C07F *15/04*; C10M *1/10, 3/02, 5/02, 7/02*

U.S. Cl. 252—49.7 **6 Claims**

1. A compound which has the formula

$H_3PO_3.2C_7H_{15}$—CHOH—CH_2OH,

$H_4SiO_4.2(C_{13}$–$C_{16})(H_{27}$–$H_{33})$—$CHOHCH_2OH$,

$BaSO_4.3(C_{13}$–$C_{16})(H_{27}$–$H_{33})$—CHOH—CH_2OH or

$NiSiO_3.3(C_{13}$–$C_{16})(H_{27}$–$H_{33})$—$CHOHCH_2OH$.

4,336,149

FUEL ECONOMY IN INTERNAL COMBUSTION ENGINES

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 968,527, Dec. 11, 1978, abandoned. This application Jun. 24, 1980, Ser. No. 162,700

Int. Cl.³ C10M *1/26, 3/20, 5/12, 7/24*

U.S. Cl. 252—56 R **4 Claims**

1. A method of improving the fuel economy of an internal combustion engine comprising lubricating the crankcase of said engine with a lubricating composition consisting essentially of an oil of lubricating viscosity and from 0.25 to 2 weight percent of pentaerythritol mono-oleate.

4,336,150

LUBRICANT

Peter M. Dorrell, Nr Northwich, England, assignor to Steetley Minerals Limited, Nottinghamshire, England

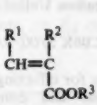
Filed Jul. 7, 1980, Ser. No. 166,601

Claims priority, application United Kingdom, Jul. 9, 1979, 7923898

Int. Cl.³ C10M *1/24, 1/26*

U.S. Cl. 252—56 R **8 Claims**

1. A lubricant suitable for use in metal forming comprising a copolymer of an unsaturated carboxylic acid and an unsaturated carboxylic acid ester, said ester having the formula:



wherein R^1 and R^2 are each independently hydrogen or methyl and R^3 is alkyl containing from 1 to 6 carbon atoms, and said

acid having the formula given above wherein R^1 and R^2 are as previously defined and R is hydrogen, said copolymer having an acid value of at least 40, or a salt of said copolymer, polytetrafluoroethylene and a liquid vehicle for the mixture, which lubricant upon application to a metal surface provides, on removal of the liquid vehicle, a coating in the form of a dry film.

4,336,151

DISINFECTANT/CLEANSER COMPOSITIONS EXHIBITING REDUCED EYE IRRITANCY POTENTIAL

Burton M. Like, East Brunswick; Dennis Smialowicz, Waldwick, and Eugene Brandli, Towaco, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 6, 1981, Ser. No. 280,657

Int. Cl.³ C11D *3/48*; A01N *33/12*; C11D *1/835*

U.S. Cl. 252—106 **16 Claims**

1. A disinfectant/cleanser composition having broad spectrum germicidal activity and exhibiting reduced eye irritancy potential which comprises:

(a) a quaternary ammonium compound;

(b) a non-ionic surfactant;

(c) d-limonene;

(d) an eye irritancy reducing effective amount of a compound selected from the group consisting of: ethoxylated cocodiethanolamide containing an amount of condensed ethylene oxide such that the eye irritancy of said composition is reduced, polyoxyethylene containing an amount of condensed ethylene oxide such that the eye irritancy of said composition is reduced, ethoxylated lanolin containing an amount of condensed ethylene oxide such that the eye irritancy of said composition is reduced, hydrolyzed animal protein, allantoin, 1,6-hexylene glycol, stearyldimethylamine oxide, dextrose sugar and imidazole; and

(e) water.

4,336,152

DISINFECTANT/CLEANSER COMPOSITIONS EXHIBITING REDUCED EYE IRRITANCY POTENTIAL

Burton M. Like, East Brunswick; Dennis Smialowicz, Waldwick, and Eugene Brandli, Towaco, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 6, 1981, Ser. No. 280,660

Int. Cl.³ C11D *1/835, 3/22, 3/348*

U.S. Cl. 252—106 **9 Claims**

1. A disinfectant/cleanser composition having broad spectrum germicidal activity and exhibiting reduced eye irritancy potential which comprises:

(a) a quaternary ammonium compound;

(b) a non-ionic surfactant;

(c) d-limonene;

(d) an eye irritancy reducing effective amount of maltodextrin

(e) a phosphate builder; and

(f) water.

4,336,153

GLASS COMPOSITION FOR WATER SETTING ION-POLYMER CEMENTS

Alan Maries, London, and Francesca M. Shreeve, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 110,056, Jan. 7, 1980, Pat. No. 4,250,277. This application Oct. 16, 1980, Ser. No. 197,404

Claims priority, application United Kingdom, Jan. 9, 1979, 7900813

Int. Cl.³ C08K *3/00, 3/38, 3/10*

U.S. Cl. 252—182 **7 Claims**

1. A glass composition for effecting crosslinking of a polycarboxylic acid cement, said composition including an aluminoborate type glass comprising 40 to 75 mole % boric oxide, not more than 20 mole % alumina, not more than 60 mole % zinc oxide, and not more than 50 mole % calcium oxide, the remainder if any comprising one or more further metal oxides, or phosphorus pentoxide or mixtures thereof.

4,336,154

PHOSPHOR AND RADIATION IMAGE STORAGE PANEL UTILIZING THE SAME

Yoshitugu Nishimura, and Noboru Kotera, both of Odawara, Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,207

Int. Cl.³ C09K *11/465*

U.S. Cl. 252—301.4 H **6 Claims**

1. A divalent metal fluorohalide phosphor represented by the compositional formula:

$$(Ba_{1-x},M^{II}_x)F_2.aBaX_2:yEu,zB$$

wherein, M^{II} is at least one member selected from the group consisting of beryllium, magnesium, calcium, strontium, zinc, and cadmium, X is at least one member selected from the group consisting of chlorine, bromine, and iodine, and a, x, y, and z are numbers satisfying the respective conditions $0.5 \leqq a \leqq 1.25$, $0 \leqq x \leqq 1$, $10^{-6} \leqq y \leqq 2 \times 10^{-1}$, and $0 < z \leqq 2 \times 10^{-1}$ and exhibiting a higher luminance than said phosphor absent B when it is exposed to and allowed to absorb radiation and is subsequently excited with light having a wavelength of 450 to 800 nm.

4,336,155

MIXTURES OF OPTICAL BRIGHTENERS

Thomas Martini, Bad Soden am Taunus; Rüdiger Erckel, Eppstein; Horst Frühbeis, Kelkheim; Günter Rösch, Bad Soden am Taunus, and Heinz Probst, Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,873

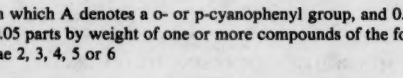
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929591

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ C09K *11/06*

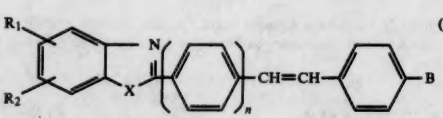
U.S. Cl. 252—301.21 **5 Claims**

1. Mixtures of optical brighteners consisting of 0.05–0.95 parts by weight of a compounds of the formula 1

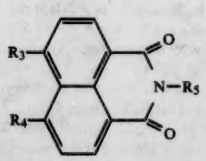


(1)

in which A denotes a o- or p-cyanophenyl group, and 0.95 to 0.05 parts by weight of one or more compounds of the formulae 2, 3, 4, 5 or 6



(2)



(3)

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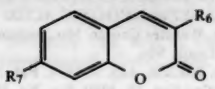
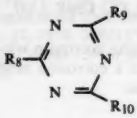
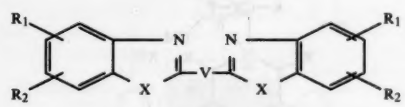
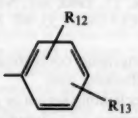

(4)


(5)

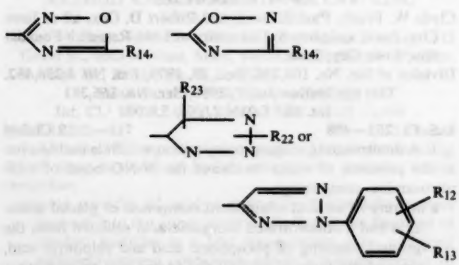
and


(6)

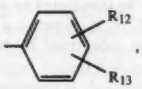
in which n denotes 0 or 1, X denotes an oxygen or sulfur atom, R_1 and R_2 denote identical or different radicals from the group comprising hydrogen, fluorine or chlorine atoms, phenyl, trifluoromethyl, C_1–C_9alkyl, alkoxy, dialkylamino, acylamino, cyano, carboxyl, carbalkoxy, carboxamide, sulfonic acid, sulfonamide or sulfonic acid alkyl ester, it being possible for two adjacent radicals R_1 and R_2 together also to represent a benzo ring, a lower alkylene group or a 1,3-dioxapropylene group, B denotes cyano, a group of the formula —$COOR_{11}$ or $CONR_{11}R_{11}$ in which R_{11} denotes hydrogen, C_1–C_{18}alkyl, cycloalkyl, aryl, alkylaryl, halogenoaryl, aralkyl, alkoxyalkyl, halogenoalkyl, hydroxyalkyl, alkylamino-alkyl, carboxyalkyl or carboalkoxyalkyl, or two alkyl or alkylene radicals with the meaning of R_{11} can also form, together with the nitrogen atom, a morpholine, piperidine or piperazine ring, or B denotes a group of the formula



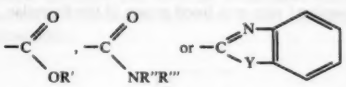
in which R_{12} and R_{13} denote identical or different radicals from the group comprising hydrogen, fluorine or chlorine atoms, phenyl, alkyl, alkoxy, acylamino, cyano, carboxyl, carbalkoxy, carboxamide, sulfonic acid, sulfonamide or sulfonic acid alkyl ester, it being possible for two adjacent radicals R_{12} and R_{13} together also to represent an alkylene group, a fused benzo ring or a 1,3-dioxapropylene group, or B denotes a group of the formulae



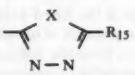
in which R_{14} denotes a straight-chain or branched alkyl group having 1–18 C atoms and preferably 1–6 C atoms, which can be substituted by hydroxyl groups, halogen atoms or alkoxy, dialkylamino, alkylmercapto, chloroaryloxy, aryloxy, arylmercapto or aryl radicals, it being possible in the case of the dialkylamino alkyl groups for the two alkyl groups together also to form a morpholine, piperidine or piperazine ring, or R_{14} denotes a group of the formula —$(CH_2CH_2O)_n$—R, in which n is 1, 2 or 3 and R is H, alkyl, dialkylaminoalkoxyalkyl or alkylthioalkoxyalkyl, it being possible for the dialkyl groups in dialkylaminoalkoxyalkyl together to form a piperidine, pyrrolidine, hexamethyleneimine, morpholine or piperazine ring, or R_{14} denotes a radical of the formula



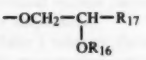
R_{22} denotes a hydrogen atom, a triphenylmethyl group or a lower alkyl radical, which is optionally substituted by a lower carbalkoxy, carboxamido, mono- or di-alkylcarboxamido, carboxyl or benzoyl group, and R_{23} denotes a cyano group or a group of the formulae



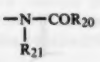
in which R', R'' and R''' denote a hydrogen atom, a lower alkyl radical or a phenyl radical, and it being possible for the lower alkyl radicals to be substituted by hydroxyl, lower alkoxy, lower dialkylamino or lower trialkylammonium groups and for the phenyl group to be substituted by halogen atoms or lower alkyl or lower alkoxy groups, and in which R'' and R''' together can also form a saturated divalent radical, Y denotes O, S or N–R, in which R is H or (C_1 to C_4)-alkyl, or B denotes a group of the formula



in which R_{15} denotes a phenyl ring, which can be substituted by one or two chlorine atoms, one or two alkyl or alkoxyalkyl groups or one phenyl, cyano, carboxyl, carbalkoxy, carboxamide, sulfonic acid, sulfonamide or sulfonic acid alkyl ester group, R_3 and R_4 can be identical or different and denote hydrogen, alkyl, cycloalkyl, alkoxy, hydroxyalkoxyethyl, halogenoalkyl, aralkyl, aryl or N,N-di-alkylamine, or R_3 and R_4 together form a five-membered heterocyclic radical having 1 to 3 hetero-atoms, preferably N atoms, R_5 denotes straight-chain or branched alkyl, alkoxyalkyl, dialkylaminoalkyl or a radical of the formula

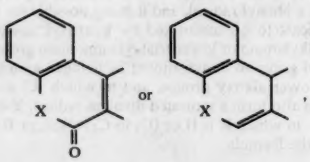


in which R_{16} is hydrogen, C_2–C_8-alkanoyl, benzoyl or a radical of the formula $R_{18}NHCO$— or $R_{19}OCO$— and R_{17} is hydrogen, alkyl or phenyl, R_{18} is alkyl, phenyl, halogenophenyl or tolyl and R_{19} is C_1–C_8-alkyl, alkoxyalkyl, cyclohexyl, benzyl, phenylethyl or phenyl which is optionally substituted by non-chromophoric substituents, or R_5 denotes a radical of the formula

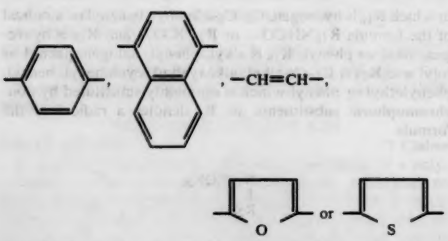


in which R_{20} is C_1–C_{10}-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkinyl,

C_1–C_8-alkoxy, C_1–C_8-alkylamino or dialkylamino, phenoxymethyl, phenyl, tolyl, benzyl or phenylethyl and R_{21} is C_3–C_{10}-alkyl, which can be substituted by phenyl, hydroxyphenyl, methoxy or dimethoxy, R_6 denotes an aryl radical, which is optionally substituted by non-chromophoric substituents, or denotes a 1,2,4-triazol-1-yl-phenyl, 1,2,3-triazol-4-yl-phenyl, 1,2,3-triazol-3-yl-phenyl or 1,2,3-triazol-2-yl-phenyl radical, which can optionally be substituted by 1 or 2 C_1–C_3-alkyl or oxalkyl groups or by oxaryl, oxalkenyl or oxalkanoyl, or R_6 denotes a heterocyclic ring having 1–3 hetero-atoms, preferably N or 0, which can be substituted by alkyl, alkoxy, halogen, aryl or halogenoaryl, or R_6 denotes a 1-oxa-2,4-diazol-5-yl radical, which can be substituted by benzyl, alkoxyphenyl, styryl, halogen, alkoxy or a further heterocyclic group, or R_6 denotes a benzimidazol-1-yl, benzimidazol-2-yl, benzthiazol-1-yl or benzthiazol-2-yl radical, which can be substituted by non-chromophoric substituents, R_7 denotes hydrogen, alkyl, alkoxy, aryl or a five-membered heterocyclic radical which has 1–3 N or 0 hetero-atoms and is bonded via a nitrogen atom and can be substituted by alkyl, aryl, hydroxyl, oxalkyl, oxalkenyl, oxaryl, oxarylalkyl, oxalkoxycarbonyl, oxcarbamoyl, oxepoxyalkyl, styryl or halogenostyryl, a fused phenyl, naphthyl or phenanthryl ring or a fused group of the formulae



and the aromatic rings in the fused groups can also be substituted by alkyl or alkoxy and X is oxygen, NH or N-alkyl, R_8 represents a polycyclic, aromatic radical having at least three fused rings, which optionally carry non-chromophoric substituents, R_9 represents an amino group, which is substituted by one or two alkyl, hydroxyalkyl, acyl or phenyl groups, it being possible for the phenyl group to contain one or more non-chromophoric radicals and for two alkyl groups, together with the nitrogen atom of the amino group, to form a pyrrolidine or piperidine ring or, with the inclusion of a further nitrogen or oxygen atom, a piperazine or morpholine ring, or R_9 represents an alkoxy, hydroxyalkoxy, acyloxy, alkylthio or carbalkylmercapto group, R_{10} independently of R_8 has the same meaning as R_9 and in addition can denote a chlorine atom and V denotes a group of the formulae



4,336,156

QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

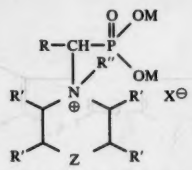
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,258, Aug. 9, 1978, Pat. No. 4,259,483. This application Sep. 15, 1980, Ser. No. 187,391

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—389 A **8 Claims**

1. A process of inhibiting corrosion which comprises treating an acid system with a corrosion inhibiting amount of a compound of the formula



where R and R″ are members selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and hydroxyphenyl and from the group consisting of alkyl, aralkyl, cycloalkyl, alkenyl, and alkynyl, respectively, R′ is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety and X is a halide, acetate, sulfonate or arylsulfonate.

4,336,157

PROCESS FOR RECLAIMING BILIVERDIN-CONTAINING FLUIDS

Nicholas J. Kartinos, Park Ridge, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 27, 1980, Ser. No. 163,857

Int. Cl.³ G01N *33/48, 31/16*

U.S. Cl. 252—408 **10 Claims**

1. The method comprising contacting a biliverdin-containing substance with dithionite ions.

10. A method for reclaiming serum or plasma having a green color due to the presence of biliverdin, comprising titering dithionite into the serum or plasma until the plasma or serum exhibits a yellow color, followed by ultrafiltration or dialysis of the plasma or serum.

4,336,158

COMPOSITION FOR DETERMINATION OF N-NITROSAMINES

Clyde W. Frank; Paul J. Nord, and Robert D. Cox, all of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Division of Ser. No. 108,236, Dec. 28, 1979, Pat. No. 4,256,462. This application Jul. 7, 1980, Ser. No. 166,381

Int. Cl.³ G01N *31/00, 33/00*

U.S. Cl. 252—408 **9 Claims**

1. A denitrosating reagent composition which is usable even in the presence of water to cleave the N-NO bond of a N-nitrosamine, comprising:

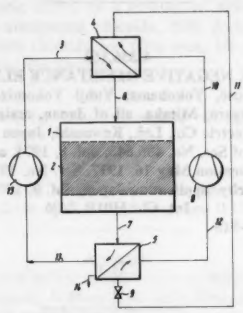
a mixture of an acid component comprised of glacial acetic acid and a concentrated inorganic acid selected from the group consisting of phosphoric acid and sulphuric acid, the volume ratio of said glacial acetic acid to said other said being from 1:2 to 5:1;

in combination with from about 0.1% to about 5% by weight of an inorganic water soluble bromide or iodide salt.

4,336,159
METHOD AND ARRANGEMENT FOR THE THERMAL REGENERATION OF CHARGED ADSORPTION MATERIALS

Karl Winter, Dortmund, Fed. Rep. of Germany, assignor to CEAG Verfahrenstechnik GmbH, Selm, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,285
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936873; Dec. 22, 1979, 2952127; Mar. 1, 1980, 3007928
Int. Cl.³ B01D *53/04;* B01J *20/34*
U.S. Cl. 252—411 R **16 Claims**



1. Method for the thermal regeneration of solid adsorption materials charged with adsorbed impurities which comprises passing a heated gaseous regeneration medium through the charged adsorption material to expel the impurities principally of an organic nature therefrom and discharging regeneration medium containing desorbate from the adsorption material, maintaining a heat pump in which a cooling medium flows in a cooling medium circuit by propelling means which directs said medium in heated condition to a condenser, disposed out of direct contact with said adsorption material, of a first heat exchange of the heat pump wherein the medium is cooled and gives off heat, and the cooled medium then flows to a vaporizer of a second heat exchanger of the heat pump wherein the medium expands and extracts heat, and returning the medium to the propelling means, heating the regeneration medium prior to entrance to the adsorption material by passing it through said first heat exchanger of the heat pump in indirect heat exchange with the cooling medium in said condenser, and cooling said discharged regeneration medium containing desorbate by passing it through said second heat exchanger in indirect heat exchange with the cooling medium in said vaporizer.

4,336,160
METHOD AND APPARATUS FOR CRACKING RESIDUAL OILS

Robert R. Dean, 4361 Riverview Dr.; Jean-Louis Mauleon, 315 Grant St., both of Alma, Mich. 48801, and Robert W. Pfeiffer, 6 Alden Pl., Bronxville, N.Y. 10708

Filed Jul. 15, 1980, Ser. No. 169,480
Int. Cl.³ B01J *21/20, 29/38;* C10G *11/18, 11/04*
U.S. Cl. 252—417 **5 Claims**

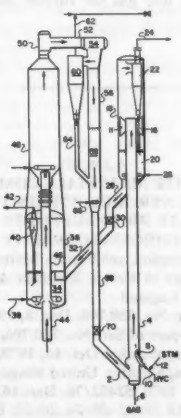
1. A method for regenerating particles of catalyst containing deactivating amounts of hydrocarbonaceous deposits which comprises,

passing particles of catalyst containing hydrocarbonaceous deposits into the upper portion of a first dense fluid bed of catalyst particles in a first regeneration zone, charging sufficient oxygen containing gas to a bottom portion of said catalyst bed to achieve a partial burning of hydrocarbonaceous deposits sufficient to burn substantially all hydrogen in the hydrocarbonaceous deposits and to produce a catalyst particle comprising from 10 to 80 wt% less carbonaceous deposits and a flue gas comprising CO and raise the temperature of the catalyst particles to within the range of 1250° to 1500° F., separately recovering partially regenerated catalyst and said flue gas comprising CO from said regeneration operation,

passing partially regenerated catalyst from a bottom portion of said first dense fluid bed of catalyst particles as a confined upflowing stream in lift gas passing upwardly through said first bed of catalyst into the bottom of a second stage catalyst regeneration zone comprising upflowing catalyst wherein the concentration of catalyst particles is higher in a substantial portion thereof than encountered in a dispersed phase riser transport zone,

introducing an oxygen containing gas into a bottom portion of said second regeneration stage separate from lift gas charged thereto with upflowing partially regenerated catalyst,

effecting a more complete regeneration of catalyst particles in said second stage with excess oxygen in contact with the catalyst permitting the temperature of the regeneration operation to seek a higher temperature up to about 1800° F., recovering a flue gas comprising CO_2, entrained catalyst particles and free of combustion supporting amounts of CO from the upper end of said second stage of regeneration,



separating a suspension of flue gas and all of the regenerated catalyst particles recovered from the upper end of said upflowing second stage regeneration zone external thereto into a CO_2 rich flue gas phase and a regenerated catalyst phase at an elevated temperature up to 1800° F. and recovering a regenerated catalyst comprising less than 0.05 wt% residual carbon thereon from said second regeneration zone suspension.

2. The method of claim 1 wherein the suspension separated from the second stage regeneration zone is initially partially separated in a zone which abruptly changes the direction of flow of the suspension into a downflowing concentrated mass of catalyst particles adjacent to a flue gas phase comprising a lower concentration of catalyst particles which is passed substantially immediately generally horizontally through a confined zone into a cyclone separation zone wherein entrained particles of catalyst are separated from CO_2 rich flue gases, and recovering the catalyst initially separated as a downflowing concentrated mass of catalyst particles at an elevated temperature up to 1800° F. for use in converting hydrocarbon feeds above the pseudo-critical temperature of the feed.

5. A method for regenerating a cracking catalyst comprising

hydrocarbonaceous deposits and metal deposits of hydrocarbon conversion which comprises,

partially regenerating the catalyst in a first dense fluid catalyst bed regenerating zone by burning carbonaceous deposits to a residual level in the range of 10 to 90 wt% with sufficient oxygen to maintain the regeneration temperature below 1500° F., to burn substantially all hydrogen present and produce a CO rich flue gas thereby leaving residual carbon on the catalysts,

separately recovering said CO rich flue gas from partially regenerated catalyst for combustion in a downstream combustion zone,

further regenerating the partially regenerated catalyst comprising residual carbon in an upflowing second separate stage catalyst regeneration zone with added regeneration gas at a temperature above 1500° F. with excess oxygen sufficient to accomplish burning of residual carbon to a level below 0.05 wt% on the catalyst and produce a CO_2 rich flue gas absent combustion supporting amounts of CO,

separating all of the regenerated catalyst of low residual carbon from said second regeneration zone at a temperature in the range of 1500° F. to 1800° F. from CO_2 rich flue gas in a sequence of external cyclone separating zones and

separately recovering catalyst thus regenerated from very hot CO_2 rich flue gas for further use in hydrocarbon conversion.

4,336,161

COMPOSITE MATERIALS COMPRISING DEFORMABLE XEROGEL WITHIN THE PORES OF PARTICULATE RIGID SUPPORTS USEFUL IN CHROMATOGRAPHY

Alan Rosevear, Faringdon, and Patrick Mattock, Botley, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 858,798, Dec. 8, 1977, which is a continuation-in-part of Ser. No. 750,706, Dec. 15, 1976, abandoned. This application Oct. 16, 1979, Ser. No. 85,201

Claims priority, application United Kingdom, Dec. 15, 1975, 51345/75; Dec. 15, 1976, 52432/76; Dec. 16, 1976, 52433/76

Int. Cl.³ B01J *20/32, 20/26, 20/22;* **B01D** *15/08*

U.S. Cl. 252—426 **9 Claims**

1. A particulate material comprising a plurality of discrete porous rigid support particles, and a deformable xerogel retained within and substantially filling the pore structure of the support particles, said deformable xerogel comprising an affinity chromatography agent such that the particulate material is a composite material having affinity chromatography properties.

4. A particulate material according to claim 1 wherein said deformable xerogel comprises a polysaccharide gel or a synthetic polymer gel.

8. A method for preparing a particulate material comprising a deformable xerogel retained in the pore structure of a particulate porous rigid support material which comprises introducing a precursor for the xerogel into the pore structure of a plurality of discrete particles of porous rigid support material such that the gel precursor fills the pores of the discrete particles, and effecting gelation of the precursor within the discrete particles to form a plurality of discrete porous rigid support particles having a deformable xerogel retained within and substantially filling the pore structure of the support particles, and treating the deformable xerogel retained within the pores of said rigid support material to impart affinity chromatography properties to the deformable xerogel.

4,336,162

ALKALI METAL AMIDE CATALYST

Guido P. Pez, Boonton, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 217,937, Dec. 18, 1980, Pat. No. 4,302,603. This application Jul. 30, 1981, Ser. No. 288,273

Int. Cl.³ B01J *27/24, 31/12*

U.S. Cl. 252—438 **4 Claims**

1. A mixed amide melting below 200° C. which comprises about 40 to about 70 mol percent cesium amide and about 30 to about 60 mol percent potassium amide.

4,336,163

OXIDE NEGATIVE RESISTANCE ELEMENT

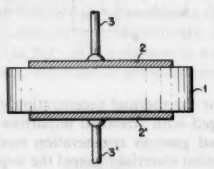
Noboru Ichinose, Yokohama; Yuhji Yokomizo, Tokyo, and Masaki Katsura, Mitaka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 486,643, Jul. 8, 1974, abandoned. This application May 16, 1977, Ser. No. 797,066

Claims priority, application Japan, Jul. 9, 1973, 48-76559

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **2 Claims**



1. A resistance element with a current-voltage characteristic having a range with negative resistance, said element comprising a main body of a sintered oxide material, said body consisting essentially of 89.9 to 20 mole % of ZnO, 10.0 to 60 mole % of MgO, and 0.1 to 20 mole % of MnO_2.

4,336,164

BRANCHED CHAIN OLEFINIC ALCOHOLS USEFUL IN PERFUME COMPOSITIONS

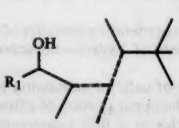
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Apr. 9, 1981, Ser. No. 252,134

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the step of intimately admixing with a perfume composition or a cologne an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1 is selected from the group consisting of methyl and isopropyl and wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents carbon-carbon single bond.

4,336,165

DEFOAMING POWDERED CARPET CLEANING COMPOSITION FOR USE IN EXTRACTION CLEANING

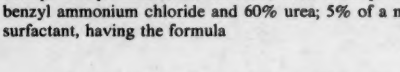
Hubert C. Weisensel, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Division of Ser. No. 51,095, Jun. 22, 1979. This application Oct. 23, 1980, Ser. No. 199,807

Int. Cl.[3] C11D *1/835, 3/10*

U.S. Cl. 252—528 1 Claim

1. A powdered carpet cleaning composition having inherent foam control which consists of 43% sodium tripolyphosphate hexahydrate; 24.25% sodium carbonate; 15% sodium metasilicate pentahydrate; 12.5% of a mixture of 20% myristyl dimethyl benzyl ammonium chloride, 20% dodecyl dimethyl benzyl ammonium chloride and 60% urea; 5% of a nonionic surfactant, having the formula



wherein R is a C_{12}–C_{18} alkyl, x is an average of 6 and y is an average of 11; 0.1% optical brightener; and 0.15% perfume.

4,336,166

COLD WATER RESISTANT ADHESIVE

Anatole G. Penczuk, Jackson, and Julius Sirota, South Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 13, 1981, Ser. No. 234,144

Int. Cl.[3] C08L *3/02, 25/16*

U.S. Cl. 524—53 9 Claims

1. A storage stable cold water resistant adhesive comprising 10 to 35% by weight starch; 3 to 20% by dry weight of a zinc salt of a carboxylated styrene-acrylate resin comprising 10 to 90% styrene and 90 to 10% acrylate and further containing 1 to 10% of carboxylated monomers per 100 parts styrene-acrylate resin; 1.5 to 6% peptizer; the remainder to total 100% being water and sufficient ammonia to provide a pH of 7.5 to 10.

4,336,167

QUICK-SETTING EPOXY RESIN COMPOUNDS

Ulrike Reeh, Munich, and Hans Denk, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,608

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016097

Int. Cl.[3] C08G *59/68, 59/42*

U.S. Cl. 523—451 9 Claims

1. A quick-setting epoxy resin compound comprising diglycidyl ester, carboxylic-acid anhydride and, as an accelerator, zinc octoate dissolved in a low molecular weight acid ester.

4,336,168

STABLE LIQUID ANTIMONY STABILIZER COMPOSITIONS AND VINYL HALIDE RESINS CONTAINING SAME

Samuel Hoch, Brooklyn, and Mario Q. Ceprini, Cedarhurst, both of N.Y., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Apr. 28, 1980, Ser. No. 144,141

Int. Cl.[3] C08K *0000*

U.S. Cl. 524—300 16 Claims

1. A heat and light stable resinous composition that comprises a vinyl halide resin and from 0.2% to 5% by weight of a shelf-stable liquid antimony stabilizer composition selected from the group consisting of

A. liquid antimony organic sulfur-containing compounds selected from the group consisting of

(1) antimony mercaptoacid esters having the formula $Sb(SRCOOR')_3$;

(2) antimony mercaptides having the formula $Sb(SR')_3$;

(3) antimony (mercaptoacid ester) (mercaptides) having the formula $(R'S)_nSb(SRCOOR')_{3-n}$;

(4) Bis(antimony di-(mercaptoacid ester)) alkylene glycol dimercaptoacid esters having the formula $(R'OOCRS)_2$-Sb-S-$(CH_2)_m$-COO-$(CH_2)_p$-OOC-$(CH_2)_m$-S-Sb-$(SRCOOR')_2$; and

(5) Bis(antimony di-(mercaptide or mercaptoacid ester)) sulfides having the formula $(R''S)_2$-Sb-S-Sb-$(SR'')_2$; and

(6) mixtures thereof

and 2% to 10% by weight of an acid organic compound selected from the group consisting of mercaptans of the formula HSR', mercaptoacids of the formula HS-$(CR^*_2)_n$-COOH, mercaptoalcohols of the formula HS-$(CR^*_2)_n$-CH_2OH, monocarboxylic acids of the formula R'''COOH, and mixtures thereof, wherein R represents alkylene, arylene, aralkylene, or alkarylene having 1 to 8 carbon atoms; R' represents alkyl, aryl, alkaryl, or aralkyl having 2 to 18 carbon atoms; R'' represents —RCOOR' or alkyl, aryl, aralkyl, or alkaryl having 2 to 18 carbon atoms; R''' represents alkyl having 6 to 11 carbon atoms or phenyl; R* represents R' or H; m is 1, 2, 3, or 4; n is 1 or 2; and p is 2, 3, or 4;

B. liquid antimony carboxylates having the formula $Sb(OOCR''')_3$ and 20% to 35% by weight of a monocarboxylic acid having the formula R'''COOH; and

C. mixtures thereof.

12. A shelf-stable liquid antimony stabilizer composition for vinyl halide resin compositions that comprises

A. a liquid antimony organic sulfur-containing compound selected from the group consisting of

(1) antimony mercaptoacid esters having the formula $Sb(SRCOOR')_3$;

(2) antimony mercaptides having the formula $Sb(SR')_3$;

(3) antimony (mercaptoacid ester) (mercaptides) having the formula $(R'S)_nSb(SRCOOR')_{3-n}$;

(4) Bis(antimony di(mercaptoacid ester)) alkylene glycol dimercaptoacid esters having the formula $(R'OOCRS)_2Sb$-S-$(CH_2)_m$-COO-$(CH_2)_p$-OOC-$(CH_2)_m$-S-Sb-$(SRCOOR')_2$;

(5) Bis(antimony di-(mercaptide or mercaptoacid ester)) sulfides having the formula $(R''S)_2$-Sb-S-Sb-$(SR'')_2$; and

(6) mixtures thereof and

B. 2% to 10% by weight of an acidic organic compound selected from the group consisting of mercaptans of the formula HSR', mercaptoacids of the formula HS-$(CR^*_2)_n$-COOH, mercaptoalcohols of the formula HS-$(CR^*_2)_n$-CH_2OH, monocarboxylic acids of the formula R'''COOH, and mixtures thereof, wherein R represents alkylene, arylene, aralkylene or alkarylene having 1 to 8 carbon atoms; R' represents alkyl, aryl, alkaryl, or aralkyl having 2 to 18 carbon atoms; R'' represents —RCOOR' or alkyl, aryl, alkaryl, or aralkyl having 2 to 18 carbon atoms; R''' represents alkyl having 6 to 11 carbon atoms or phenyl; R* represents R' or H; m is 1, 2, 3, or 4; n is 1 or 2; and p is 2, 3, or 4.

4,336,169

UNSATURATED POLYESTER RESINS

George D. Hamer, and Robert F. Russell, both of Wellingborough, England, assignors to Scott Bader Company Limited, Northamptonshire, England

Filed Dec. 16, 1980, Ser. No. 217,021

Claims priority, application United Kingdom, Dec. 21, 1979, 7944073

Int. Cl.[3] C08L *67/06, 91/08*

U.S. Cl. 523—511 4 Claims

1. An unsaturated polyester resin composition for ambient temperature open lay-up moulding containing styrene as an agent for cross-linking during curing, a wax for preventing air inhibition and 0.1 to 5% by weight of the composition of at

least one compound for allowing reduction of styrene evaporation characterized in that the said compound is of the formula

$$R_1—X—CH=CHCOOH$$

where

R_1 is selected from the group consisting of straight- and branched-chain substituted and unsubstituted aliphatic C_6–C_{24} hydrocarbons and

X is selected from the group consisting of

$$—O—\overset{\overset{O}{\|}}{C}—,\ —\overset{\overset{O}{\|}}{C}—O—\text{ and }—O—.$$

4,336,170

METHOD OF TREATMENT OF AN AQUEOUS DISPENSION OF MICROCAPSULES

Tetsuro Horiike; Tomoyuki Okimoto, and Tomoharu Shiozaki, all of Amagasaki, Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,835

Claims priority, application Japan, Aug. 27, 1979, 54/109378[U]

Int. Cl.³ C08L *61/20*

U.S. Cl. 521—55 **9 Claims**

1. A method for removing residual formaldehyde from an aqueous dispersion of microcapsules, each microcapsule having a capsule wall of an aldehyde polycondensation resin formed by polycondensation of formaldehyde with at least one amine in the presence of an acid catalyst comprising the combination of steps:

(a) adjusting said aqueous dispersion to an alkaline state;

(b) adding to said alkaline aqueous dispersion at least one reaction catalyst selected from the groups consisting of:

(i) metal hydroxides,

(ii) phosphates,

(iii) calcium salts, and

(iv) magnesium salts; and

(c) heating and agitating said alkaline aqueous dispersion to cause a reaction to remove residual formaldehyde therefrom.

4,336,171

AQUEOUS BINDER DISPERSION FOR PRODUCING VULCANIZATION BONDS BETWEEN RUBBER AND A SOLID SUBSTRATE

Hans-Peter Kohlstadt, Essen; Riza N. Özelli, Neuss, and Gerhard Gierenz, Solingen-Wald, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel GaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,130

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923651

Int. Cl.³ C08L *39/06*

U.S. Cl. 524—510 **2 Claims**

1. An aqueous binder dispersion for use in the production of composite bodies by vulcanizing a vulcanizable rubber composition on a solid metal which is stable under vulcanization conditions consisting essentially of water and at least one emulsifier and a solids content of from 20% to 50% by weight of a solids composition of:

(a) per 1000 parts by weight of a polymer selected from the group consisting of polyvinylidene chloride, vinylidene chloride/alkyl acrylate copolymers, butadiene/acrylonitrile copolymers and mixtures thereof,

(b) from 100 to 500 parts by weight of at least one aromatic poly-C-nitroso compound,

(c) from 50 to 300 parts by weight of masked polyfunctional isocyanates selected from the group consisting of aromatic diisocyanates, alkylene diisocyanates and aromatic polyisocyanates, masked with masking agents selected from the group consisting of tert.-alkanols, compounds containing a carbonyl-activated methylene group, dicarboxylic acid imides and sodium hydride,

(d) from 20 to 100 parts by weight of a water-soluble polymer selected from the group consisting of polyvinyl pyrrolidone and water-soluble copolymers of vinyl pyrrolidone, and

(e) from 5 to 500 parts by weight of customary fillers and pigments, adhesion-improving resins based on formaldehyde condensation products, adhesion-improving condensation products based on epichlorohydrin condensation products, emulsifiers and antifoam agents,

said aqueous binder dispersion not exceeding 5% by weight of the liquid phase of organic solvents.

4,336,172

AQUEOUS DISPERSIONS OF CROSS-LINKABLE COPOLYMERS BASED ON (METH)ACRYLATES, THEIR PREPARATION AND USE AS STOVING ENAMELS

Klaus Marquardt; Herbert Eck, and Werner Bathelt, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,468

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926631

Int. Cl.³ C08L *31/02*

U.S. Cl. 524—555 **5 Claims**

1. An aqueous dispersion for use in stoving enamels containing from 30% to 70% by weight of a cross-linkable copolymer consisting essentially of:

(a) from 30% to 70% by weight of said copolymer of monomer units of monomers giving homopolymers having a glass transition temperature of 80° C. or higher selected from the group consisting of alkyl esters with alkyl having from 1 to 4 carbon atoms of methacrylic acid and styrene,

(b) from 19% to 69% by weight of said copolymer of monomer units of monomers giving homopolymers having a glass transition temperature of 10° C. or lower, said monomers being alkyl esters with alkyl having from 1 to 8 carbon atoms of acrylic acid,

(c) from 0 to 20% by weight of said copolymer of monomer units of other monomers selected from the group consisting of (meth)acrylic acid and its salts, (meth)acrylamide, (meth)acrylonitrile, N-methylol-(meth)acrylamide, N-alkoxymethyl-(meth)acrylamide, N-vinyl-2-pyrrolidone, N-vinyl-lactams, butadiene, isoprene, divinylbenzene, vinyl lower alkanoates, vinyl halides, vinylidene halides, ethylene, alkenedioic acids having from 4 to 8 carbon atoms, salts of alkenedioic acids having from 4 to 8 carbon atoms, mono-lower alkyl esters of alkenedioic acids having from 1 to 8 carbon atoms, di-lower alkyl esters of alkenedioic acids having from 1 to 8 carbon atoms, monoamides of alkenedioic acids having from 1 to 8 carbon atoms, and diamides of alkenedioic acids having from 1 to 8 carbon atoms, and

(d) from 1% to 15% by weight of said copolymers of monomer units of (meth)allyl esters of the formula

$$CH_2=\overset{R'}{\overset{|}{C}}—CH_2—O—\overset{\overset{O}{\|}}{C}—R—OH$$

wherein R represents a straight-chained alkylene having 2 to 10 carbon atoms, optionally substituted with up to three methyl and/or ethyl groups, and R' represents a member selected from the group consisting of hydrogen and methyl, where the hydroxy group is linked to a carbon atom having at least one hydrogen attached thereto.

4,336,173

PROCESS FOR PREPARING AN AQUEOUS EMULSION OR DISPERSION OF A PARTLY WATER-SOLUBLE MATERIAL, AND OPTIONALLY FURTHER CONVERSION OF THE PREPARED DISPERSION OR EMULSION TO A POLYMER DISPERSION WHEN THE PARTLY WATER-SOLUBLE MATERIAL IS A POLYMERIZABLE MONOMER

John Ugelstad, Trondheim, Norway, assignor to SINTEF, Norway

Continuation of Ser. No. 10,989, Feb. 8, 1979, abandoned. This application Sep. 10, 1980, Ser. No. 186,008

Claims priority, application Norway, Feb. 21, 1978, 780596; Aug. 28, 1978, 782920

Int. Cl.³ C08L 25/06

U.S. Cl. 523—205 32 Claims

1. A process for preparing an aqueous emulsion or dispersion of a partly water-soluble material which comprises:

(a) preparing an emulsion or dispersion of particles comprising:

(i) polymer and

(ii) Substance I which is one or more materials having a molecular weight of <5000 and a water solubility of $<10^{-2}$ g/l and is substantially absorbed by said polymer and

(b) adding to said emulsion or dispersion, Substance II which is one or more partly water-soluble materials having a water solubility at least 10 times higher than that of Substance I, whereby Substance II diffuses into the polymer particles containing Substance I at a rate substantially in excess of the rate of departure of Substance I from said polymer particles, the amount of said Substance II diffusing into said particles containing Substance I being at least 20 times that of the original polymer particles used in (a) based on volume, and then causing polymerization to take place if Substance II is a monomer.

4,336,174

HARDBOARD TREATING COMPOSITION AND PROCESS FOR FORMING HARDBOARD SURFACES

Salvatore G. Sanfilippo, and James T. White, both of Tuscaloosa, Ala., assignors to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Filed May 19, 1980, Ser. No. 151,172

Int. Cl.³ C08L 61/28

U.S. Cl. 524—512 5 Claims

1. A storage-stable aqueous polymeric composition for application to the wet surfaces of lignocellulose fiber hardboard sheets before processing in a forming press that maintains the sheets under heat and pressure, said aqueous composition being (A) a homogeneous three-component system containing on a dry solids basis a miscible mixture of from about 40 to about 60 percent by weight of a water-soluble melamine-formaldehyde copolymer, from about 15 to about 30 percent by weight of a styrene-acrylic copolymer emulsion, and from about 18 to about 30 percent by weight of a water-soluble methylated melamine-formaldehyde copolymer; (B) from about 25 to about 32 percent by weight of a compound capable of adjusting the pH of the composition; and (C) from about 3 to about 7 percent by weight of a cross-linking acid catalyst, based upon the total weight of the solids said composition having a dry resin solids range of from about 30 to about 40 parts by weight.

4,336,175

POLYIMIDE PRECURSOR SOLUTIONS

Hugh H. Gibbs, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1980, Ser. No. 192,708

Int. Cl.³ C08K 5/05, 5/34, 5/06

U.S. Cl. 524—726 5 Claim

1. In a solution of 2,2-bis(3',4'-dicarboxyphenyl) hexafluoropropane (6FTA), aromatic diamine and a solvent, the improvement wherein the 6FTA and aromatic diamine are present in quantities to provide a stoichiometric monomer imbalance of about from 2 to 9 mole percent, and the solvent is selected from the group consisting of lower alkanols of 1–4 carbon atoms, diglyme and mixtures of lower alkanol and diglyme with each other or each with up to 50% by weight of N-methyl-2-pyrrolidone.

4,336,176

POLYVINYL CHLORIDE PROCESSING

Robert A. Lindner, Newberg, N.Y., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Jan. 12, 1981, Ser. No. 223,885

Int. Cl.³ C08K 5/10

U.S. Cl. 524—310 11 Claims

1. A process for manufacturing a polyvinyl choride containing composition having therein a primary stabilizer which is an organo-tin compound to stabilize against the thermal degradation of the composition, the improvement therein comprising adding to such composition an effective amount of an internal lubricant to lower the melt viscosity during preparation of such composition said lubricant being a partial fatty ester of 2,2-bishydroxymethyl-1,3-propanediol wherein said partial ester is about 20 percent to about 50 percent monoester, about 35 percent to about 65 percent diester, and about 10 percent to about 35 percent by weight triester said composition being substantially free of unreacted 2,2-bishydroxymethyl-1,3-propanediol and the tetraester wherein the ester is formed from a fatty acid having the following composition:

(a) 0 percent to 15 percent by weight 14 carbon saturated fatty acid;

(b) 0 percent to 10 percent by weight 15 carbon saturated fatty acid;

(c) 25 percent to 75 percent by weight 16 carbon saturated fatty acid;

(d) 0 percent to 10 percent by weight 17 carbon saturated fatty acid;

(e) 25 percent to 75 percent by weight 18 carbon saturated fatty acid; thereby lowering the melt viscosity during preparation of such composition.

4,336,177

POLYMERIZATION PROCESS

Alan J. Backhouse, South Ascot; Charles Bromley, Bourne End, and Morice W. Thompson, Maidenhead, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 4, 1980, Ser. No. 212,753

Claims priority, application United Kingdom, Dec. 6, 1979, 7942092

Int. Cl.³ C08K 5/01

U.S. Cl. 523—201 10 Claims

1. A process for the production of a stable dispersion in a non-aqueous liquid medium of composite polymer microparticles having a diameter of from 0.1 to 10 microns, each of which comprises a core of crosslinked polymer surrounded by and grafted to a layer of non-crosslinked polymer, the process comprising the steps of (1) polymerising one or more ethylenically unsaturated monomers, including at least one crosslinking monomer, from which the crosslinked core polymer of the microparticles is to be derived, in an aqueous medium as hereinbefore defined at a temperature at least 10° C. higher than the glass transition temperature of the core polymer in the presence in the aqueous medium as steric stabiliser of a block or graft copolymer which contains in the molecule a polymeric component which is solvatable by the aqueous medium and another polymeric component which is not solvatable by the aqueous medium and is capable of becoming associated with the polymer particles formed, the concentration of free monomer in the polymerisation mixture being maintained throughout this process step at a level such that at no time does the free monomer form a separate phase and the total amount of monomer polymerised being such that the resulting dispersion con-

tains at least 20% by weight of microparticles, (2) polymerising, in the dispersion obtained from step (1), one or more further ethylenically unsaturated monomers, not including any crosslinking monomer, from which the non-crosslinked polymer of the outer layer is to be derived, optionally in the presence of additional block or graft copolymer stabiliser, the concentration of such further monomer in the free state in the polymerisation mixture being maintained at a level such that at no time does that free monomer form a separate phase, and (3) transferring the polymer microparticles from the resulting dispersion into a non-aqueous liquid medium which is a solvent for the non-crosslinkable polymer under such conditions that the particles become stably dispersed therein.

4,336,178

PROCESS FOR PREPARING ABRASION AND CORROSION RESISTANT MATERIAL

Alexandru Heidingher, and Ioan Sinko, both of Baia Mare, Romania, assignors to Centrala Minereurilor si Metalurgiei, Neferoase Baia Mare, Baia Mare, Romania

Continuation-in-part of Ser. No. 68,858, Aug. 21, 1979, abandoned, which is a continuation of Ser. No. 934,935, Aug. 18, 1978, abandoned, which is a continuation of Ser. No. 762,223, Jan. 24, 1977, abandoned. This application Sep. 30, 1980, Ser. No. 192,273

Claims priority, application Romania, Feb. 2, 1976, 84675

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—206 **1 Claim**

1. A process for preparing an abrasion and corrosion resistant material, comprising mixing two epoxy resins having different molecular weights at an elevated temperature of 80° C. up to about 120° C., each of said resins being formed from epichlorohydrin and 2,2-bis-parahydroxyphenyl propane, have a molecular weight between 350 and 1400, and mixed in a ratio of 1:2 by weight, and adding phthalic anhydride hardener to form a binder; adding to said binder a prewet erosion resistant component consisting essentially of a mixture of 80–85% by weight of the final product of Al_2O_3 and SiC in a weight ratio of 1:2 each having a particle size below 5 mm; and 0.5–3% by weight of the final product of spun glass having a fiber length of between 3 and 5 mm, said component having been prewet with a solution of said binder in acetone; homogenizing said binder and said prewet component; and heating said homogenized material at a temperature of 130° C. up to about 160° C. for about 1–5 hours.

4,336,179

RESIN BINDERS FOR FOUNDRY SAND CORES AND MOLDS

Raja Iyer, Hazelcrest, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Filed Mar. 19, 1981, Ser. No. 245,294

Int. Cl.³ C08L *61/06*

U.S. Cl. 523—145 **20 Claims**

1. In a free-flowing granular material for the preparation of foundry cores and molds comprising an intimate admixture of sand, an acidic catalyst and a resin binder, the improvement comprising using as said binder, a phenolic resole resin solution prepared by:

(a) heating a mixture comprised of a phenol and a molar excess of an aldehyde in the range of from about 1.1 to about 2.5 moles of aldehyde per mole of the phenol in an aqueous medium with a basic catalyst;

(b) concentrating the mixture by evaporation under reduced pressure until the water content is less than about 25% by weight;

(c) cooling the concentrated mixture; and

(d) adding to the cooled concentrated mixture an amount of a phenol equal to at least about 3% by weight of the phenol in the mixture to give a material with improved curing speed.

4,336,180

SOLVENT-FREE POLYURETHANES WITH FIBROUS REINFORCING AGENTS

Klaus Recker, Cologne, and Gerhard Grögler, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,816

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013263

Int. Cl.³ C08L *75/12*

U.S. Cl. 524—847 **14 Claims**

1. A substantially solvent-free molding material, comprising

(A) from 92 to 30% by weight, of an active-hydrogen containing prepolymer containing: from 0.3 to 4% by weight, based on the prepolymer, of free primary and/or secondary amino groups, from 1.5 to 10% by weight, based on the prepolymer, of urethane groups, and from 1.5 to 10% by weight, based on the prepolymer, of urea groups;

(B) from 24 to 1% by weight of a polyisocyanate having a melting point above 120° C.; and

(C) from 5 to 69% by weight of an organic or inorganic fibrous material with a fiber length of from 0.1 to 100 mm,

the equivalent ratio between NCO groups, including masked NCO groups, and active H-atoms of components (A) and (B) is between 1:1 and 1:1.75.

4,336,181

FLAME RETARDANT MOLDING COMPOUND

Kenneth A. Iseler, Richmond, and Vinod C. Shah, Sterling Heights, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed May 19, 1980, Ser. No. 151,225

Int. Cl.³ C08K *3/40, 67/06, 3/22*

U.S. Cl. 523—501 **22 Claims**

1. A matured, moldable resin molding composition for use in making a molded article including:

a first relatively fast reacting unsaturated polyester resin said first resin being present in an amount of about 5 to 15 weight percent of the molding composition, said first resin having a ratio of hydroxyl to carboxyl groups of about 5.7 to 0.8, an acid number of at least 18, and an average molecular weight of about 800 to 5000, said first resin being present in amounts of about 5 to 15 percent;

a second relatively slower reacting polyester resin having a ratio of hydroxyl to carboxyl groups of about 5.7 to 0.8, an acid number of about 8 to 17 and an average molecular weight of about 800 to 5000, said second resin being present in an amount of about 5 to 15 percent of the molding composition;

a thermoplastic polymer having a reactive group, said polymer being present in an amount of about 5 to 15 percent by weight of the molding composition, said thermoplastic polymer when cured forming a solid phase incompatible with the cured material resulting from the copolymerization of the first and second polyester resins;

about 35 to 45 percent by weight of aluminum trihydrate in the molding composition;

about 1 to 5 weight percent of a brominated unsaturated polyester resin, said brominated resin having about 25 to 45 percent by weight bromine groups in the brominated resin;

about 0.15 to 2 percent by weight of antimonytrioxide the ratio of brominated unsaturated polyester resin to antimonytrioxide being in the range of about 1 to 20;

an aliphatically unsaturated monomer; and

a free radical polymerization catalyst.

4,336,182

SELF-EXTINGUISHING POLYMERIC COMPOSITIONS

Gianluigi Landoni; Spartaco Fontani, and Osvaldo Cicchetti, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 25, 1980, Ser. No. 172,295
Claims priority, application Italy, Jul. 27, 1979, 24732 A/79
Int. Cl.[3] C08K 3/32; C08L 79/04
U.S. Cl. 524—416 11 Claims

1. Self-extinguishing polymeric compositions based on a thermoplastic polymer, and comprising for 100 parts by weight of the total composition:

(1) from 10 to 20 parts by weight of a compound selected from the group consisting of amine phosphates, ammonium phosphates and ammonium polyphosphates;

and

(2) from 5 to 8 parts by weight of a nitrogen-containing product consisting of an oligomer or a polymer, insoluble in water, containing in the monomeric unit a —CO— group attached to the nitrogen atom of a ring selected from the piperazine and imidazolidin-2-one rings.

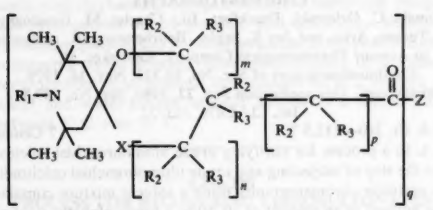
4,336,183

2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBOXYLIC ACID ESTERS AND AMIDES OF MONO AND POLY ALCOHOLS, PHENOLS AND AMINES AS STABILIZERS FOR SYNTHETIC POLYMERS

Yutaka Nakahara, Iwatsuki; Toshihiro Shibata, Omiya, and Naohiro Kubota, Ageo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Continuation-in-part of Ser. No. 167,889, Jul. 14, 1980. This application Aug. 14, 1980, Ser. No. 178,202
Claims priority, application Japan, Jul. 12, 1979, 54/88474
Int. Cl.[3] C07D 491/113, 498/10; C08K 5/35
U.S. Cl. 524—95 33 Claims

1. 2,2,6,6-Tetramethyl-4-piperidyl carboxylic acid esters and amides having the general formula:



wherein:

R_1, R_2 and R_3 are selected from the group consisting of hydrogen and alkyl having from one to about eighteen carbon atoms;

X is oxygen or imino>NH;

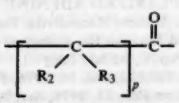
m is zero, 1 or 2;

n is zero, 1 or 2;

m+n is 1 or 2;

p is zero or 1;

q is 1 to 6;



is linked to carbon in place of one R_2 or R_3 group; and

Z is selected from the group consisting of:

(a) OR_5 where R_5 is alkyl, aryl or cycloalkyl having one to twenty-four carbon atoms and hydroxy-, carboxy- and oxy-substituted such groups having from one to five OH or O groups; and 2,2,6,6-tetramethyl-4-piperidyl;

(b) OR_6O where R_6 is alkylene, arylene or cycloalkylene having one to twenty-four carbon atoms and hydroxy-substituted such groups having one to four OH groups; R_6 alkylene, arylene or cycloalkylene can include oxyether —O— and thioether —S— linking groups attached to alkylene, arylene or cycloalkylene groups as in polyoxyalkylene and polythioalkylene groups and polyoxyalkylene arylene groups having from one to about five oxy or thio groups and from two to about six alkylene groups having from two to about six carbon atoms;

(c)

where R_6 is alkylene, arylene or cycloalkylene having one to twenty-four carbon atoms and hydroxy-substituted such groups having one to four OH groups;

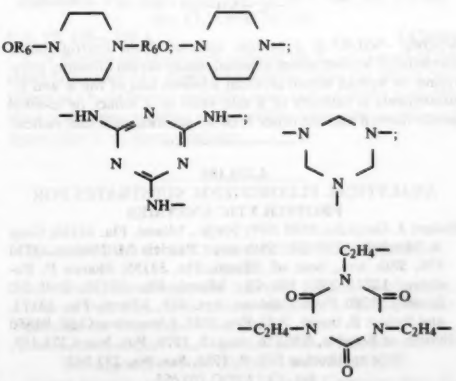
R_6 alkylene, arylene or cycloalkylene can include oxyether —O— and thioether —S— linking groups attached to alkylene, arylene or cycloalkylene groups as in polyoxyalkylene and polythioalkylene groups and polyoxyalkylene arylene groups having from one to about five oxy or thio groups and from two to about six alkylene groups having from two to about six carbon atoms; R_7 is alkyl, aryl or cycloalkyl having one to twenty-four carbon atoms and hydroxy-substituted such groups having from one to five OH groups;

(d) NHR_5 where R_5 is alkyl, aryl or cycloalkyl having one to twenty-four carbon atoms and amino-substituted such groups having from one to five amino groups;

(e)

where R_6 is alkylene, arylene or cycloalkylene having one to twenty-four carbon atoms and amino-substituted such groups having one to four amino groups; R_7 is alkyl, aryl or cycloalkyl having one to twenty-four carbon atoms and amino-substituted such groups having one to five amino groups;

(f) —$NHNH_2$; —NHNH—; —NHNHCOCONHNH_2; —NHNHCOR_7; —NHNHCOR_6CONHNH_2; —NHNHCOR_6CONHNH—; —NHNHCOCONHNH—; —NHR_6NH_2—; —NHR_6NH—; NHR_6NHCOR_6CONHR_6NH;



where R_6 is alkylene, arylene or cycloalkylene having one to twenty-four carbon atoms and amino-substituted such groups having one to four amino groups; and such groups

including oxyether and thioether linking groups as in (b) above, and R_7 is as in (c) above.

27. An olefin polymer composition having improved resistance to deterioration comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having from two to six carbon atoms and polystyrene, and a compound in accordance with claim 1.

4,336,184

INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYPHENYLENE ETHER COMPOSITIONS

Yuval Halpern, Skokie, Ill., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 12, 1981, Ser. No. 292,117
Int. Cl.³ C08K *3/32*; C08V *9/00*
U.S. Cl. 523—179 **5 Claims**

1. Thermoplastic polyphenylene ether compositions comprising (a) thermoplastic polyphenylene ether-styrenic resin blend, (b) a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

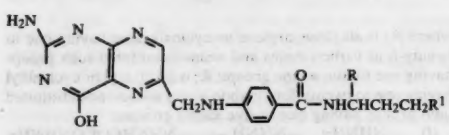
4,336,185

FOLIC ACID DERIVATIVES

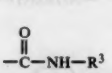
Gordon D. Niswender, Fort Collins, Colo., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 868,368, Jan. 10, 1978, abandoned, which is a division of Ser. No. 663,037, Mar. 2, 1976, abandoned. This application Aug. 23, 1979, Ser. No. 69,144
Int. Cl.³ C07D *475/04*
U.S. Cl. 260—112 R **1 Claim**

1. A compound of the formula:



wherein R and R^1 are carboxy or a salt, ester or a mono- or dialkyl amide thereof or a radical of the formula:



wherein -NH-R^3 is a protein selected from thyroglobulin, methylated bovine serum albumin, sheep serum albumin, polylysine, or human serum albumin wherein one of the R and R^1 substituents is carboxy or a salt, ester or a mono- or di-alkyl amide thereof and the other R or R^1 substituent is said radical.

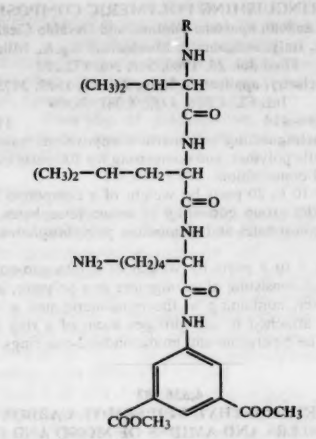
4,336,186

ANALYTICAL FLUOROGENIC SUBSTRATES FOR PROTEOLYTIC ENZYMES

Robert J. Gargiulo, 5605 NW. 7th St., Miami, Fla. 33126; Gary A. Mitchell, 1795 SW. 59th Ave.; Patricia M. Hudson, 3730 SW. 58th Ave., both of, Miami, Fla. 33155; Sharon P. Pochron, 12242 SW. 108 Ct., Miami, Fla. 33176; Rolf M. Huseby, 9280 Fountainbleau, Apt. 101, Miami, Fla. 33172, and Robert E. Smith, P.O. Box 2033, Livermore, Calif. 94550

Division of Ser. No. 930,826, Aug. 3, 1978, Pat. No. 4,275,153. This application Feb. 9, 1981, Ser. No. 232,942
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. A fluorogenic substrate, suitable for determining plasmin and plasmin-like enzymes in a fluid, comprising a compound formula:



or acid salts thereof, wherein R is hydrogen-L, hydrogen-D, benzoyl, benzene sulfonyl, glutaryl, pyroglutamyl, carbobenzoxy, D-serine or carbobenzoxyserine, with the proviso that said substrate is enzymatically hydrolyzable by said plasmin, or plasmin-like enzymes to yield 5-aminoisopthalic acid dimethyl ester.

4,336,187

PURIFICATION OF CALCITONIN BY PARTITION CHROMATOGRAPHY

Ronald C. Orlowski, Frankfort, Ill.; Charles M. Groginsky, Tucson, Ariz., and Jay K. Seyler, Bourbonnais, Ill., assignors to Armour Pharmaceutical Company, Kankakee, Ill.

Continuation-in-part of Ser. No. 94,323, Nov. 14, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,812
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T **7 Claims**

1. In a process for purifying crude ultimobranchial calcitonin the step of subjecting said crude ultimobranchial calcitonin to partition chromatography using a solvent mixture containing butanol in an amount of 30–50%, a lower alphatic alcohol which is ethanol, methanol, or propanol, or mixtures thereof, in an amount of 5–15%, acetic acid in an amount of 0.01 to 0.03%, and 0.2 M ammonium acetate in an amount of from 40–60%, these percentages being by volume based on the volume of the solvent mixture.

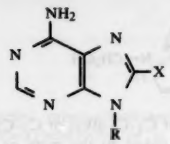
4,336,188

METHOD FOR THE PREPARATION OF MACROMOLECULARIZED ADENINE DERIVATIVES

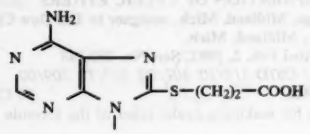
Piergiorgio Zappelli; Antonio Rossodivita; Rosario Pappa, all of Monterotondo, and Luciano Re, Rome, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Division of Ser. No. 705,012, Jul. 14, 1976, Pat. No. 4,091,203. This application Feb. 22, 1978, Ser. No. 880,133
Claims priority, application Italy, Jul. 15, 1975, 25419 A/75; May 4, 1976, 22958 A/76
Int. Cl.³ C07H *19/20*
U.S. Cl. 260—112.5 R **5 Claims**

1. A method for the preparation of macromolecularized adenine derivatives which comprises the steps of reacting a compound which contains a halogen atom in the 8-position and which has the formula,



wherein X is a halogen and R is the non-adenine residue of the compound, with a di-alkali metal salt of an omega-mercaptocarboxylic acid at a temperature in a range of from about 20° C. to about 60° C. under anhydrous conditions and forming a functionalized adenine derivative compound, converting the functionalized adenine derivative compound to its corresponding free acid containing an adenine radical and having the formula



and in which the adenine radical is selected from the group consisting of nicotinoylamide adenine dinucleotide, nicotinoylamide adenine dinucleotide phosphate, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, and adenine, and condensing the functionalized adenine free acid derivative with a polymer selected from the group consisting of polysine, omega-aminoalkyl polyanilamides, polysaccharide esters of omega-aminoalkyl carbamic acids, polyvinyl-amine, omega-aminoalkyl esters and omega-aminoalkylamides of polyglutamic acid, aminoalkyl silanized glass microspheres, and polyethyleneimine in the presence of a condensing agent selected from water-soluble or insoluble carbodiimides in an aqueous environment or in a mixture of water and water-soluble organic solvent at a temperature between 5° C. and 50° C.

4,336,189

PROCESS FOR RECOVERING LIGNOSULFONATES FROM SPENT SULFITE LIQUOR

Sirpa L. Hämäläi, Tampere; Seppo T. Koivunen, Heinola; Anna-Kaisa Kontturi, Kerava, and Veli J. Sarkkinen, Pori, all of Finland, assignors to Oy Tampella AB, Tampere, Finland

Filed May 28, 1980, Ser. No. 153,947

Claims priority, application Finland, May 28, 1979, 791695

Int. Cl.³ C07G *1/00*

U.S. Cl. 260—124 R **2 Claims**

1. A process for recovering lignosulfonates from spent sulfite liquor resulting from the cooking of cellulose-containing material comprising:

(a) extracting the spent liquor with a liquid amine dissolved in a strongly polar ketone as an organic solvent, which ketone is poorly soluble in water, to form a lignosulfonate-bearing organic phase and an aqueous phase;

(b) separating the organic phase from the aqueous phase;

(c) recovering the substantially sugar-free lignosulfonates from the organic phase by stripping the organic phase with a base insoluble in the organic phase;

(d) regenerating the stripped, lignosulfonate-free organic phase by treating it with an aqueous solution of sodium bisulfite to bring the liquid amine in the phase into bisulfite form; and

(e) returning the regenerated organic phase for further extraction of spent liquor.

4,336,190

COPPER COMPLEX FORMAZAN COMPOUNDS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS DYESTUFFS

Günther Schwaiger, and Ernst Hoyer, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

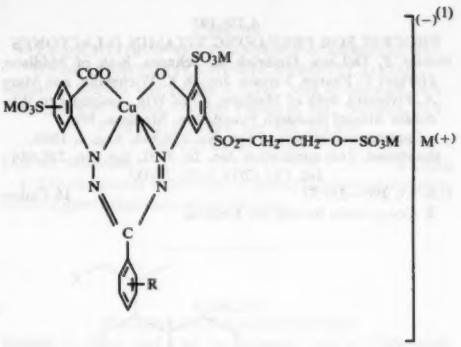
Filed Nov. 7, 1980, Ser. No. 204,915

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945537

Int. Cl.³ C09B *50/00*

U.S. Cl. 260—149 **5 Claims**

1. A copper complex formazan compound of the formula



in which M is hydrogen or the equivalent of a metal and R is hydrogen or chlorine.

4,336,191

PENICILLIN CONVERSION BY HALOGEN ELECTROPHILES AND ANTI-BACTERIALS DERIVED THEREBY

Stjepan Kukolja, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 522,539, Nov. 11, 1974, abandoned, which is a division of Ser. No. 273,550, Jul. 20, 1972, Pat. No. 3,860,577, which is a division of Ser. No. 148,129, May 28, 1971, abandoned. This application Feb. 25, 1977, Ser. No. 772,086

Int. Cl.³ C07D *205/08*

U.S. Cl. 260—239 A **2 Claims**

1. A method for selectively opening the S, —C_5 bond of the thiazolidine ring of a compound selected from the group consisting of a 6-acylamido penicillin ester and a 6-imido penicillin ester comprising reacting the penicillin ester with an alkanoyl hypohalite in an aprotic solvent.

4,336,192

5,6-DIHYDRO-11-ALKYLENE-MORPHANTHRIDIN-6-ONES

Gerd Steiner, Kirchheim, and Albrecht Franke, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

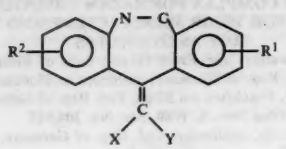
Continuation of Ser. No. 144,061, Apr. 28, 1980, abandoned. This application Nov. 20, 1980, Ser. No. 208,974

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918832

Int. Cl.³ C07D *223/20*

U.S. Cl. 260—239.3 T **2 Claims**

1. A compound of formula I



where R^1 and R^2 are hydrogen, chlorine or methyl, X is hydrogen or methyl and Y is methylcarbonyl.

4,336,193

PROCESS FOR PREPARING VITAMIN D-LACTONES

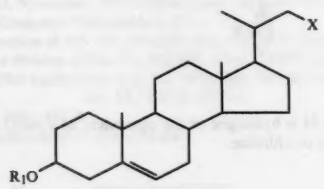
Hector F. DeLuca; Heinrich K. Schnoes, both of Madison; Herbert E. Paaren, Verona; Joseph K. Wichmann, and Mary A. Fivizzani, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 174,944, Aug. 4, 1980, abandoned. This application Jan. 26, 1981, Ser. No. 228,486

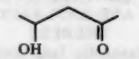
Int. Cl.³ C07J *9/00, 17/00*

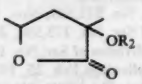
U.S. Cl. 260—239.57 **16 Claims**

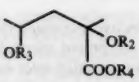
2. Compounds having the formula



where X is selected from







R_1, R_2 and R_3 are selected from the group consisting of hydrogen, acyl, alkylsilyl and tetrahydropryanyl and R_4 is hydrogen or alkyl in all their isomeric forms.

4,336,194

BENZYL PYRROLYL METHYL CARBOXYLATE INSECTICIDES AND ACARICIDES

Tadashi Ohsumi, Kyoto; Nobushige Itaya, Nishinomiya, and Masachika Hirano, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

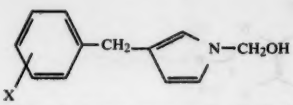
Division of Ser. No. 948,049, Oct. 3, 1978, Pat. No. 4,212,879. This application Jul. 13, 1979, Ser. No. 57,282

Claims priority, application Japan, Oct. 7, 1977, 52-121244

Int. Cl.³ C07D *207/325*

U.S. Cl. 548—562 **2 Claims**

1. A compound of the formula (IV)



wherein X is a hydrogen atom, or C_1–C_3 alkyl or C_1–C_3 alkoxyl group, or a halogen atom linked to the meta or para position.

4,336,195

PREPARATION OF CYCLIC ETHERS

James M. Renga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1981, Ser. No. 230,245

Int. Cl.³ C07D *319/10, 307/00, 307/77, 309/00*

U.S. Cl. 549—462 **10 Claims**

1. A process for making a cyclic ether of the formula

having five to six atoms in the cyclic ether ring structure, which process comprises contacting a lower alkyl carbonate of the formula $RR'CO_3$ wherein R and R′ are each independently a methyl or ethyl radical with a dihalide of the formula XCH_2-A-CH_2X wherein each X is Cl or Br and A is a divalent radical of the group 1,2-alkylene, 1,3-alkylene, 1,2-phenylene, oxydimethylene and oxyethylene in the presence of a quaternary ammonium or phosphonium salt at about 100° C.–200° C.

4,336,196

PROCESS FOR THE PRODUCTION OF PHENYLMALONIC ACID MONO-ESTERS

Shigeo Kitamura, Oyabe; Kazuo Yoshioka; Yoshiharu Seriyama, both of Takaoka, and Hiroshi Misuta, Toyama, all of Japan, assignors to Nippon Soda Company Limited, Tokyo and Shionogi Company Limited, Osaka, both of, Japan

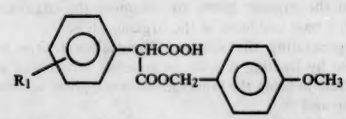
Filed Jul. 21, 1980, Ser. No. 170,910

Claims priority, application Japan, Jul. 27, 1979, 54-95060; Jun. 25, 1980, 55-85149

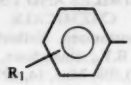
Int. Cl.³ C07D *309/06;* **C07C** *69/773*

U.S. Cl. 549—416 **2 Claims**

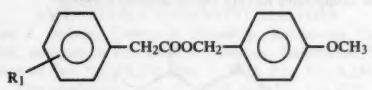
1. A process for the production of phenylmalonic acid mono-esters having the following general formula:



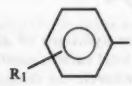
wherein



is phenyl mono-substituted by 2-tetrahydropyranyloxy or p-methoxybenzyloxy or is disubstituted by p-methoxybenzyloxy or p-methoxybenzyloxy and methoxy, which process consits of reacting phenylacetic acid esters having the following formula:



wherein



has the foregoing definition, with carbon dioxide in the presence of a sodium-substituted compound of an organic compound selected from the group consisting of acetylene, cumene, methyl-methyl-thiomethyl-sulfoxide and dimethyl-sulfoxide at a temperature of from about −20° C. to about −40° C., and neutralizing or weakly acidifying the reaction mixture with acid.

4,336,197

6-ETHYL-2,10,10-TRIMETHYL-1-OXA-SPIRO[4.5]DECA-3,6-DIENE

Peter Fankhauser, Onex, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

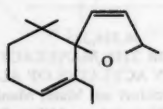
Filed Jan. 30, 1981, Ser. No. 230,406

Claims priority, application Switzerland, Feb. 8, 1980, 1013/80

Int. Cl.³ C07D *307/94*

U.S. Cl. 549—331 **1 Claim**

1. Compound of formula



(I)

4,336,198

PREPARATION OF MALEIC ANHYDRIDE USING COATED CATALYSTS CONTAINING HIGH LOADING OF ACTIVE PHASE

Serge R. Dolhyj, Parma, and Marc A. Pepera, Broadview Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 104,603, Dec. 17, 1979, Pat. No. 4,312,787. This application Jun. 8, 1981, Ser. No. 271,153

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **17 Claims**

1. A process for the production of maleic anhydride by the oxidation of n-butane, n-butenes, 1,3 butadiene or a mixture thereof with molecular oxygen or a molecular oxygen-containing gas in the vapor phase at a reaction temperature of 250° C. to 600° C. in the presence of a catalyst, wherein said catalyst comprises an essentially inert, at least partially porous support of at least about 20 microns in diameter, said support having an outer surface, and a catalytically active oxide material coating on said outer surface of said support which strongly adheres to said outer surface of said support wherein said oxide material consists essentially of the mixed oxides of vanadium and phosphorus, present in an amount greater than 50% to about 80% by weight of the combined support and oxide material wherein said oxide material is applied to said outer surface of said support by partially wetting said support with a liquid, contacting the partially wet support with a powder of said oxide material, and effecting said oxide coating.

4,336,199

5-(2,4-DICHLOROPHENYL)-3-FURANCARBOXALDEHYDE-O-[(METHYLAMINO)CARBONYL]OXIME

Robert J. Alaimo, and Joseph E. Gray, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 10, 1981, Ser. No. 281,994

Int. Cl.³ C07D *307/54*

U.S. Cl. 549—496 **1 Claim**

1. The compound 5-(2,4-dichlorophenyl)-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime.

4,336,200

17α-ACYLOXY-5β-CORTICOIDS

Donald E. Ayer, and Carl A. Schlagel, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 117,401, Jan. 31, 1980, abandoned. This application Jan. 28, 1981, Ser. No. 229,257

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **1 Claim**

1. 21-Chloro-6α,9α-difluoro-11β,17α-dihydroxy-16β-methyl-5β-pregnane-3,20-dione 17-propionate.

4,336,201

PREPARATION OF ELECTRICALLY CONDUCTIVE CAROTENOIDS

Franz Feichtmayr, Ludwigshafen; Herbert Naarmann, Wattenheim; Joachim Paust, Neuhofen, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

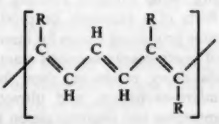
Filed Nov. 3, 1980, Ser. No. 203,598

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947797

Int. Cl.³ C07C *175/00*; C11C *3/02*

U.S. Cl. 260—410.9 V **8 Claims**

1. A process for the preparation of an electrically conductive polyene which comprises treating a carotenoid having one or more chain members of the formula



where R is hydrogen or methyl, and which contains a total of not less than seven aliphatic double bonds, in the essential absence of moisture and of oxygen, with from 0.03 to 0.9 mole percent, based on carotenoid employed, of a strong Lewis acid having a pk_a of from −10 to +4 or of an alkali metal.

4,336,202

1,3-CYCLOHEXANEDIONE DERIVATIVES

Sigeru Torii; Kenji Uneyama, both of Okayama; Takashi Onishi, Kurashiki; Yoshiji Fujita, Kurashiki; Michihiro Ishiguro, Kurashiki, and Takashi Nishida, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

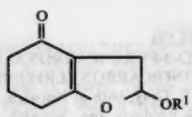
Filed May 18, 1981, Ser. No. 264,463

Claims priority, application Japan, May 29, 1980, 55-72406; Jun. 12, 1980, 55-79702

Int. Cl.³ C07D *307/83;* C07C *49/403*

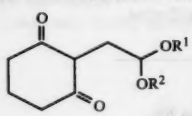
U.S. Cl. 549—466 5 Claims

1. A cyclohexanone derivative selected from the group consisting of compounds having the formula:



(I)

wherein R^1 is a hydrocarbon group of 1 to 15 carbon atoms and compounds having the formula:



(II)

wherein R^1 is as defined above; R^2 is a hydrocarbon group of 1 to 15 carbon atoms.

4,336,203

PROCESS FOR THE CONTINUOUS PRODUCTION OF ALKALI METAL SALTS OF FATTY ACIDS

Friedrich J. Zucker, St. Andreas-Strasse 16, D-4040 Neuss 21; Georg Osthaus and Paul Plassmann, both of Neuss, all of Fed. Rep. of Germany, assignors to Friedrich J. Zucker, Neuss, Fed. Rep. of Germany

Continuation of Ser. No. 90,044, Oct. 31, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,568

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847457

Int. Cl.³ C11C *1/04*

U.S. Cl. 260—417 10 Claims

1. A process for the continuous production of alkali metal salts of fatty acids comprising the steps of: reacting a fatty acid mixture with an alkali metal hydroxide in stoichiometric quantities, optionally in the presence of other additives of the type normally used in the manufacture of soap; reacting the reaction mixture in the absence or presence of up to a maximum of 15% by weight of solvent in the shear field of a rotor-stator machine with interengaging radial surfaces; running off the reaction product in the form of a granulate or product strand, said rotor-stator machine producing forces for immediate spontaneous conversion of continuously supplied reaction components without substantial delay; producing shear forces, peripheral elastic forces, micro-cavitation, and ultrasonic alternating pulses from compression and decompression for affecting the reaction, the reaction being spontaneous and exothermic, mixing and reacting occurring substantially simultaneously; and cooling the reaction product evaporatively by reaction water vaporization to avoid discolorization, said product leaving the reaction zone in form of a substantially small aggregate with a substantially high degree of capillaries.

4,336,204

MENTHENE NITRILES AND USE AS PERFUME CHEMICALS

Willem Lenselink, Voorthuizen, Netherlands, assignor to Polak's Frutal Works, B.V., Amersfoort, Netherlands

Division of Ser. No. 20,308, Mar. 14, 1979, Pat. No. 4,235,805. This application Feb. 22, 1980, Ser. No. 123,581

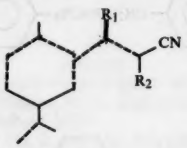
Claims priority, application United Kingdom, Mar. 20, 1978, 10938/78

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ C07C *121/48*

U.S. Cl. 260—464 18 Claims

1. A compound having the structural formula



wherein R_1 and R_2 are hydrogen or alkyl groups of 1 to 6 carbon atoms and the total carbon number of R_1 and R_2 combined is 6 or less and wherein the dotted lines within the ring represent a carbon-carbon double bond in one of the four ring positions and carbon-carbon single bonds in the other three ring positions and the dotted lines in the side chain substituents represent either carbon-carbon single bonds or carbon-carbon double bonds with no more than one double bond being present in the nitrile group-containing side chain.

4,336,205

METHOD FOR PRODUCING AROMATIC NITRILES

Isatsugu Onishi, Ikeda; Itsuo Furuoya, Suita, and Ichiro Minato, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,461

Claims priority, application Japan, Apr. 1, 1980, 55-43119

Int. Cl.³ C07C *120/14;* C07D *213/57*

U.S. Cl. 260—465 C 9 Claims

1. A method for producing aromatic nitriles which comprises reacting an alkyl-substituted aromatic compound with ammonia and oxygen in the presence of a catalyst containing, as active ingredients, oxides of (1) vanadium, (2) antimony and (3) at least one of uranium and chromium.

4,336,206

PROCESS FOR THE MANUFACTURE OF CYANOHYDRIN ACYLATES OF ALDEHYDES

Rainer Mündnich, Frankfurt am Main; Manfred Finke, Kelkheim; Walter Rupp, Königstein, and Klaus Dehmer, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 149,969

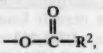
Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919974

Int. Cl.³ C07C *120/00, 121/38, 121/46, 121/66*

U.S. Cl. 260—465.4 16 Claims

1. A single stage process for the manufacture of a cyanohydrin acylate of an aldehyde which consists of reacting an aldehyde of the formula R^1—CHO in which R^1 is (C_1–C_8)-alkyl or (C_2–C_6)-alkenyl, an aqueous solution of cyanide of the formula MCN in which M is an alkali metal ion or an ammonium ion and an organic acid chloride or acid anhydride of the formula

in which R^2 is (C_1–C_4)-alkyl or phenyl and R^3 is Cl, Br or



in the presence of an inert organic solvent immiscible in water, in substantially equimolar amounts of 1:(1–1.1):(1–1.1), respectively, at a temperature in the range of −20° C. to +20° C.

4,336,207

PHOSPHORUS DERIVATIVES OF AMINOTHIOCARBAMOYL HALIDES

Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

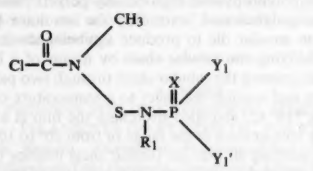
Division of Ser. No. 43,276, Jun. 1, 1979, Pat. No. 4,234,521. This application Jun. 23, 1980, Ser. No. 161,973

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

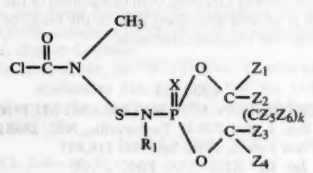
Int. Cl.³ C07F *9/22, 9/24*

U.S. Cl. 260—936 **18 Claims**

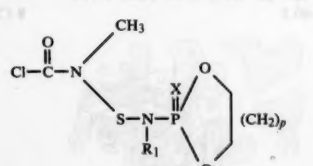
1. A compound having the formula selected from the group consisting of:



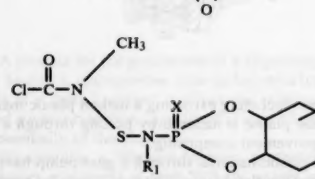
II



II'



II''



II'''

wherein R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cycloalkyl; X is oxygen or sulfur; Y_1 and Y'_1 are the same or different and are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy; wherein Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl, and K is 0 or 1; p is three or four, and R_9 is selected from the group consisting of hydrogen, lower-alkyl, lower-alkoxy and halogen.

4,336,208

CARBURETOR FOR INTERNAL COMBUSTION ENGINE

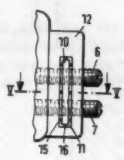
Reinhard Gerhardy, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,185

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005854

Int. Cl.³ F02M *3/08*

U.S. Cl. 261—71 **12 Claims**



1. In combination with a receiving part located on one of a carburetor and an internal combustion engine of a power saw, said receiving part being provided with at least one bore for respectively having fastened and secured therein an adjustment screw; the improvement in which said receiving part is further provided with a recess, and which includes a clamping piece which is arranged in said recess in such a way as to be secure against rotation, said clamping piece receiving said adjustment screw in a positive, locking manner, said clamping piece being provided with holding means for securely holding said clamping piece in said recess of said receiving part, said clamping piece comprising flexible material and being provided with bores, which are free of threads and respectively have a smaller diameter than the diameter of the associated adjustment screw, in order to make it possible to receive respective adjustment screws in said bores in a positive locking manner, said holding means comprising projections arranged on the surfaces as well as on the edges of said clamping piece to provide a snug fit of said clamping piece in said recess.

4,336,209

PROCESS AND DEVICE FOR PREPARING CAST EXPLOSIVE BODIES

Nils O. Gylden, Ceremonimästarvägen 81, S-181 40 Lidingö; Nial T. Karlen, Olovsvägen 19, S-147 00 Tumba; Jarl B. E. Andersson, Söderby Kvarn 2503, S-137 00 Västerhaninge, and Anders G. T. Andersson, Granbacken 12, S-147 00 Tumba, all of Sweden

Filed Jun. 7, 1979, Ser. No. 46,166

Claims priority, application Sweden, Jun. 9, 1978, 7806744

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 R **7 Claims**

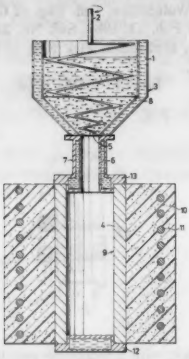
1. A process for preparing an explosive body shaped as a right circular cylinder by vacuum casting of an explosive material mixture comprising a liquid, melted phase, and solid components having a higher density than the liquid phase and dispersed therein, said process comprising:

homogenizing the explosive material mixture and introducing the mixture into an insulated mould having a flat bottom head member and vertical walls symmetric about a longitudinal axis of the mould;

maintaining a uniform temperature over the entire surface of the flat bottom head member facing the interior of the mould;

maintaining in the vertical walls a temperature field having a temperature gradient constant in the axial direction and symmetric about the mould axis whereby thermal equilibrium is achieved between different parts of the explosive

mixture so that sedimentation occurs without disturbance from convection currents within the mixture; and



slowly lowering the temperature in the bottom head member to obtain controlled solidification of the mixture.

4,336,210

PROCESS FOR THE PREPARATION OF FINELY DIVIDED THERMOPLASTIC RESIN

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,838
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—8 **8 Claims**

1. A process for preparing in finely divided form a solid organic polymeric thermoplastic resin which comprises:

(a) agitating a mixture of the resin while in the molten state, a dispersion-forming amount of water, and a dispersion-forming amount of a substantially water-insoluble ionomer polymer dispersing agent, to provide a hot aqueous dispersion of the resin;

(b) cooling the dispersion to provide solid particles of resin; and,

(c) recovering said solid particles of resin from the aqueous dispersion to provide said solid polymer thermoplastic resin in finely divided form.

4,336,211

METHOD FOR THE PREPARATION OF SHAPED ARTICLES OF A VINYL CHLORIDE BASED RESIN HAVING IMPROVED SURFACE PROPERTIES

Michihiko Asai; Yoshio Suda, both of Tokyo; Kiyoshi Imada, Saitama; Susumu Ueno, and Hirokazu Nomura, both of Ibaraki, all of Japan, assignors to Agency of Industrial Science and Technology and Shin-Etsu Chemical Company, Limited, both of Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 206,992
Claims priority, application Japan, Nov. 19, 1979, 54-149769
Int. Cl.³ C08F *2/48*
U.S. Cl. 264—22 **1 Claim**

1. A method for the preparation of a shaped article of a vinyl chloride-based resin insusceptible to the exudation of a plasticizer or other additive ingredient contained therein which comprises the steps of

(a) admixing a plasticizer, 100 parts by weight of a vinyl chloride-based resin with from 0.5 to 10 parts by weight per 100 parts by weight of the vinyl chloride-based resin of an epoxy compound to give a resin composition, said epoxy compound containing at least 2% by weight of the oxirane oxygen in a molecule,

(b) fabricating the resin composition into a shaped article, and

(c) irradiating the surface of the shaped article with ultraviolet light having a substantial energy distribution in the wavelength region of 200 nm or shorter.

4,336,212

COMPOSITION FOR DRAWN FILM, COLD DRAWN FILM MADE OF SAID COMPOSITION AND PROCESS FOR MANUFACTURE OF SAID FILM

Isao Yoshimura; Hideo Hata, and Takashi Kaneko, all of Kawasaki, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 60,638, Jul. 25, 1979, Pat. No. 4,302,557, which is a division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Jul. 17, 1981, Ser. No. 284,464
Claims priority, application Japan, Oct. 11, 1977, 52-1209; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872
Int. Cl.³ B29D *7/02, 7/24*
U.S. Cl. 264—22 **21 Claims**

1. A process for the manufacture of a cold drawn film having a tensile strength of not less that 5.00 kglmm2 and a haze of not more than 4.0%, which comprises mixing the specific combination of components, of (B)+(C)$_x$: wherein

(B) is an elastomer having a density of not more than 0.91 g/cm^3 and made of an ethylene-α-olefin copolymer, and

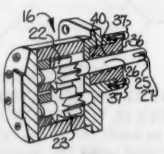
(C) is at least one selected from the group consisting of crystalline polypropylene, high-density polyethylene and crystalline polybutene-1, extruding the resultant blend through an annular die to produce a tubular sheet, suddenly solidifying the tubular sheet by means of a liquid refrigerant, passing the tubular sheet through two pairs of nip rollers and heating the sheet to a temperature of not exceeding 110° C., and then stretching the film at a cold stretching temperature in the range of from 20° to 100° C. while introducing air into the tubular sheet interior under pressure for thereby effecting cold orientation of the sheet into a film at an area stretching ratio in the range of from 5 to 30 times the original dimension.

4,336,213

PLASTIC EXTRUSION APPARATUS AND METHOD

Steve A. Fox, Rte. 1, Box 745-B, Taylorsville, N.C. 28681

Filed Feb. 6, 1980, Ser. No. 118,897
Int. Cl.³ B29F *3/06;* F04C *25/00*
U.S. Cl. 264—40.1 **8 Claims**



1. In a method including extruding a melted plastic material and wherein the plastic is metered by passing through a gear pump, the improvement comprising:

passing said plastic material through a gear pump having

(a) an enclosed housing having inlet port means for receiving the melted plastic, and discharge port means for discharging the plastic therefrom,

(b) gear means rotatably mounted within said housing and adapted upon forward rotation to convey the plastic from said inlet port means to said discharge port means,

(c) a shaft extending through said housing and operatively connected to said gear means for transmitting rotational torque to the same, said shaft including a cylindrical outer surface portion, and

(d) means for sealing said shaft to said housing to effectively preclude leakage of the melted plastic therebetween, said sealing means comprising a sleeve removably secured to

said housing and having an internal cylindrical bore closely surrounding said cylindrical surface portion of said shaft, with said cylindrical bore having a shallow helical channel formed therein and extending along at least a substantial portion of the axial length thereof, said channel being of generally rectangular cross-sectional configuration and having a depth not exceeding the square root of

$$6(pi)DNuL/P \tan Q$$

wherein D is the diameter of said shaft, N is the rotational speed of the shaft in revolutions per second, u is the viscosity of the plastic, L is the length of the seal, P is the pressure of the plastic, and Q is the lead angle of the helical channel, with such variables being in consistent units, and with the helical channel being of a hand such that forward rotation of the shaft and gear means results in the plastic which enters the clearance between said shaft cylindrical bore to be effectively pumped back toward the interior of the housing, and including the steps of

delivering the melted plastic to said inlet port means under pressure of at least about 600 psi, and

rotating said gear means at said rotational speed and in a direction such as to forwardly convey the plastic, and including pumping substantially all of the plastic which enters the clearance between said shaft cylindrical surface portion and said cylindrical bore back toward the interior of said housing.

4,336,214
PROCESS FOR HYGROSCOPIC, FIBRES AND FILAMENTS OF SYNTHETIC POLYMERS

Ulrich Reinehr, Dormagen; Hermann-Josef Jungverdorben, Neukirchen; Toni Herbertz, Dormagen; Alfred Nogaj, Dormagen, and Peter Kleinschmidt, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 746,727, Dec. 2, 1976, abandoned. This application Jan. 31, 1980, Ser. No. 117,161

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1975, 2554124

Int. Cl.³ B29H *7/20*

U.S. Cl. 264—49 **4 Claims**

1. A process for the production of a hygroscopic filament or fiber having a microporous core-jacket structure, a moisture regain of at least 2 percent at 65 percent relative humidity/21° C. and a water retention capacity of at least 10 percent; consisting essentially of the steps of

(1) dry-spinning a filament-forming synthetic acrylonitrile polymer containing at least 50% by weight of acrylonitrile units, a solvent therefor, and 5 to 50 percent by weight, based on the solvent and solids, of a non-solvent liquid which

(a) has a higher boiling point than the solvent used,

(b) is readily miscible both with the solvent and with water, and

(c) is a non-solvent for the synthetic polymer to be spun;

under such conditions that during spinning the solvent is evaporated from the filaments in the spinning duct; but as little as possible of the non-solvent liquid evaporates in the spinning duct; and

(2) removing said liquid non-solvent for the acrylonitrile polymer from said filament or fiber by washing it out during the course of the aftertreatment;

wherein said solvent is dimethyl acetamide, dimethyl sulphoxide, N-methyl pyrrolidone or dimethyl formamide.

4,336,215
SINTERED CERAMIC BODY AND PROCESS FOR PRODUCTION THEREOF

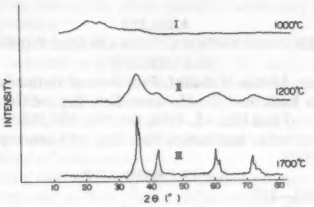
Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Oharai, Japan, assignors to Ube Industries, Ltd., Japan

Filed Nov. 25, 1980, Ser. No. 210,445

Claims priority, application Japan, Nov. 30, 1979, 54-154198; Dec. 17, 1979, 54-162835; Mar. 31, 1980, 55-40305

Int. Cl.³ C04B *35/52*

U.S. Cl. 264—63 **15 Claims**



1. A process for producing a sintered ceramic body, which comprises heating a semi-inorganic block copolymer at a temperature of from 500° to 2300° C. in vacuum or in an atmosphere composed of at least one gas selected from the group consisting of inert gases, reducing gases and hydrocarbon gases, said copolymer comprising polycarbosilane blocks, having a main-chain skeleton composed mainly of carbosilane units of the formula —Si—CH_2—, each silicon atom of said carbosilane units having bonded thereto a side-chain group selected from the class consisting of hydrogen, lower alkyl and phenyl, and titanoxane units of the formula —Ti—O—; and shaping the heated product, and simultaneously with, or after, the shaping of the heated product, sintering the shaped product at a temperature of from 800° C. to 2300° C. in vacuum or in an atmosphere composed of at least one gas selected from the group consisting of inert gases, reducing gases and hydrocarbon gases.

4,336,216
PROCESS FOR PRODUCING SILICON CARBIDE HEATING ELEMENTS

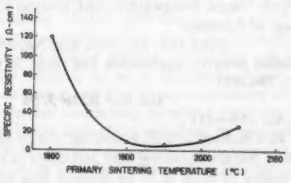
Masakazu Watanabe; Akiyasu Okuno, and Yasushi Matsuo, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jun. 9, 1980, Ser. No. 157,738

Claims priority, application Japan, Jun. 8, 1979, 54-72464

Int. Cl.³ C04B *35/56*

U.S. Cl. 264—65 **7 Claims**



1. A process for producing a silicon carbide heating element comprising:

a primary sintering wherein a mixture including (1) beta-SiC powder having an average particle diameter of not more than 1.0μ, (2) from 0.3 to 3.0% by weight, based on the weight of the beta-SiC powder, of boron or a corresponding amount of a boron compound, and (3) from 0.1 to 3.0% by weight, based on the weight of the beta-SiC powder, of carbon or a corresponding amount of a carbon compound is molded and sintered in vacuum or in a non-nitrogen inert atmosphere to obtain a sintered product having from 70 to 95% of the theoretical density; and

a secondary sintering wherein the sintered product obtained in the primary sintering is further sintered in an atmosphere of nitrogen gas at a temperature from 1,600° C. to 2,200° C. to obtain a silicon carbide heating element having a density of at least 80% of the theoretical density and a specific resistivity of not more than 1.0 Ω-cm.

4,336,217

CONTINUOUS PRODUCTION OF GAS DIFFUSION ELECTRODES

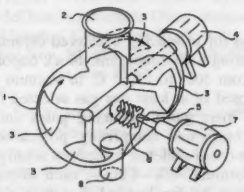
Hans Sauer, Idstein-Walsdorf, Fed. Rep. of Germany, assignor to Varta Batterie A.G., Hanover, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,215

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941774

Int. Cl.³ B05D *5/12*

U.S. Cl. 264—105 **8 Claims**



1. The process for manufacture of a plastic-cohered active carbon layer for gas diffusion electrodes, particularly air electrodes utilizing a paddle mixer and a cutting head with sharp knives, said process comprising

subjecting a dry mixture of active carbon powder and polytetrafluoroethylene powder while it is still in the paddle mixer, before rolling or pressing, additionally to an intensive subdividing influence of the rotating sharp knives of the cutting head,

whereby the polytetrafluoroethylene temporarily evaporates, at least partially, and deposits upon the carbon powder.

4,336,218

METHOD FOR RECOVERING RESIDUAL MATTER ACCUMULATED IN THE PRODUCTION AND MACHINING OF STEEL

Werner Kaas, Buchenstr. 173, D-4220 Dinslaken; Hans-Helmut Borggrefe, Herzogenweg 10, D-4156 Willich 1, and Klaus-Dieter Unger, Forstwaldstr. 684, D-4150 Krefeld 1, all of Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,684

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942899

Int. Cl.³ B22F *3/06*

U.S. Cl. 264—111 **16 Claims**

1. In a method in which residual matter of the type accumulated as metal-containing dust and chips in the production and machining of steel is to be formed into briquettes, with the addition of a binder, the steps comprising:

selecting the chips to have a length of about 7 to 30 mm; 3% to 8% by weight of water;

allowing the moistened dust time to hydrate free lime contained in the dust; and

forming a mixture of the dust, binder, and chips into briquettes.

4,336,219

METHOD FOR PELLETIZING SILICA

Trevor G. Lamond, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Aug. 11, 1980, Ser. No. 176,893

Int. Cl.³ B01J *2/06*

U.S. Cl. 264—117 **4 Claims**

1. A method for forming pellets of a particulate siliceous material selected from the group consisting of silica, sodium silicates and sodium aluminosilicates, by pelletizing in aqueous medium in a pelletizer, the steps comprising:

(a) passing said siliceous material to a pelletizer;

(b) passing an ammonium stearate aqueous suspension into said pelletizer so that the ammonium stearate is present in the pelletizer at a level of from 0.1 to 5% by weight of the siliceous material;

(c) pelletizing said siliceous material in the presence of said ammonium stearate in said pelletizer to form pellets of siliceous material;

(d) removing said pellets from said pelletizer; and

(e) drying said pellets.

4,336,220

METHOD OF AND APPARATUS FOR MANUFACTURING A CONTINUOUS SLIDE FASTENER STRINGER

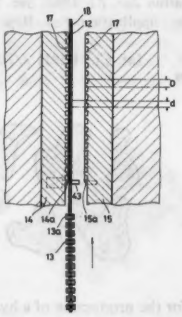
Kihei Takahashi, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 190,979

Claims priority, application Japan, Oct. 1, 1979, 54-125345

Int. Cl.³ B29D *5/00*

U.S. Cl. 264—229 **12 Claims**



1. A method of manufacturing a continuous slide fastener stringer including a continuous stringer tape and a row of injection-molded coupling elements secured to the stringer tape along a longitudinal edge thereof, said method comprising the steps of:

(a) providing a stringer tape having a plurality of openings in the stringer tape along the longitudinal edge thereof at regular intervals of a first distance;

(b) then placing a part of the stringer tape between a pair of relatively movable mold members defining a predetermined number of mold cavities spaced at regular intervals of a second distance slightly greater than said first distance;

(c) then stretching said part of the stringer tape until the openings therein are aligned with the mold cavities in the mold members;

(d) then injecting melted synthetic resin material into the mold cavities, while the mold members are closed with the open-

ings in said part of the stringer tape aligned with the mold cavities of the mold members, to form on said part of the stringer tape the coupling elements, one at each of the openings; and

(e) repeating the preceding steps (b), (c) and (d) for a succeeding part of the stringer tape.

3. An apparatus for manufacturing a continuous slide fastener stringer including a continuous stringer tape and a row of injection-molded coupling elements secured to the stringer tape along a longitudinal edge thereof, the stringer tape having a plurality of openings along the longitudinal edge thereof at regular intervals of a first distance, said apparatus comprising:

(a) a frame;

(b) a pair of relatively movable mold members supported on said frame and defining a predetermined number of mold cavities spaced at regular intervals of a second distance slightly greater than said first distance, said mold members being movable relatively to each other between a first position in which said mold members are fully opened for the passage therethrough of the stringer tape, a second position in which said mold members are half closed to hold only one end of one of the successive parts of the stringer tape, and a third position in which said mold members are fully closed to hold throughout its length said one of the successive parts of the stringer tape;

(c) means supported on said frame both upstream and downstream of said mold members for intermittently advancing tape through said mold members;

(d) means supported on said frame to engage the other end of said one of the successive parts of the stringer tape for stretching said one of the successive parts of the stringer tape, while said mold members are in said second position, until said openings in said one of the successive parts of the stringer tape are aligned with said mold cavities; and

(e) means associated with said mold members for injecting melted synthetic resin material into said mold cavities, while said mold members are in said third position, to form on said one of the successive parts of the stringer tape the coupling elements, one at each of the openings.

4,336,221

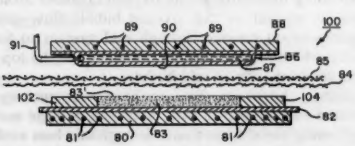
PROCESS FOR MAKING A STRESS-FREE PLASTIC ARTICLE

Armen Garabedian, 8-22 Astoria Blvd., Long Island City, N.Y. 11102

Division of Ser. No. 929,304, Jul. 31, 1978, Pat. No. 4,243,368, which is a continuation-in-part of Ser. No. 647,832, Jan. 9, 1976, and a continuation-in-part of Ser. No. 817,048, Jul. 19, 1977, Pat. No. 4,104,101, which is a continuation of Ser. No. 279,964, Aug. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,495, May 10, 1971, abandoned, which is a division of Ser. No. 805,093, Feb. 14, 1969, abandoned, which is a continuation of Ser. No. 536,140, Mar. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 473,342, Jul. 20, 1965, Pat. No. 3,383,265, said Ser. No. 647,832, is a continuation of Ser. No. 424,654, Dec. 14, 1973, abandoned, which is a continuation of Ser. No. 141,495, , abandoned. This application Dec. 23, 1980, Ser. No. 219,431

Int. Cl.³ B28B *9/00*

U.S. Cl. 264—241 **8 Claims**



1. The process of making a plastic article from finely divided plastic particles comprising:

(a) applying a quantity of said plastic particles to a first member, said particles comprising a first and a second plastic powder, said first and second powders differing from one another, and a layer of the first powder overlying the second powder, whereby the article produced is a laminate;

(b) confining a fluid under pressure within a sealed and self-contained flexible envelope;

(c) disposing said sealed and self-contained flexible envelope and said first member in opposed relationship with said plastic particles therebetween;

(d) disposing between said plastic particles and said sealed, self-contained envelope an air release means comprising a porous fabric and a wire cloth with said porous fabric being adjacent said plastic particles;

(e) urging said sealed, self-contained envelope against said air release means and said plastic particles such that said sealed, self-contained envelope applies a fluid-like pressure on said plastic particles;

(f) applying heat to the plastic particles while they are under said pressure;

(g) venting entrapped gases through said air release means from between said particles while the latter are being heated and pressed with said fluid-like pressure;

(h) controlling the degree of pressure and heat applied to said plastic particles to achieve sufficient pressure and heat to cause the particles to melt and to be formed into the shape of said article;

(i) releasing said applied pressure on said plastic;

(j) cooling said molten plastic sufficiently to permit its removal from said first member; and

(k) removing said molded plastic article from said first member.

4,336,222

PROCESS OF AND AN APPARATUS FOR BENDING STRETCHED PLASTIC CASINGS

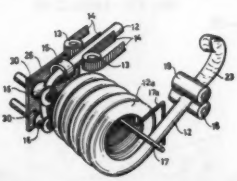
Christiaan M. Prohn, Parpan, Switzerland, assignor to International Chemical Engineering Establishment, Vaduz, Liechtenstein

Filed Apr. 28, 1980, Ser. No. 144,359

Claims priority, application Netherlands, Aug. 30, 1979, 7906526

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—519 **10 Claims**



1. In a continuous process for producing curved sausage casing, the process comprising inflating a portion of the length of a continuously moving strip of sausage casing between first and second clamped longitudinally separated locations, selectively heating a first circumferential portion of the inflated casing at an intermediate location and forming a curved inflated casing, the improvement wherein the first circumferential portion is selectively heated without contacting said first portion with a solid surface, so as to thermally shrink the heated portion of the casing and thus cause a curvature of the inflated casing, and further comprising directing the curvature of the inflated casing into a desired curved shape by contacting a second circumferential portion of the inflated casing against a deflecting surface at an adjacent intermediate location, the second circumferential portion forming the outer curvature of the curved inflated casing, and the first circumferential portion forming the inner curvature of the curved casing, the second portion being substantially opposite the heated first portion;

continuously collecting the curved inflated casing to form a helical coil of the inflated casing; loosely supporting the helical coil by a support; and cooling the coiled inflated casing while being loosely supported; the first circumferential portion being out of contact with a solid surface when being heated and when the second portion is being pressed against the deflecting surface.

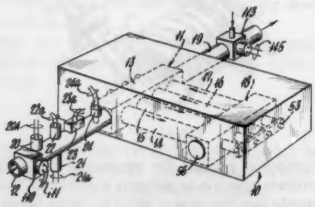
7. In apparatus for continuously forming curved inflated sausage casing, the apparatus comprising first and second clamping means for clamping the inflated casing at first and second longitudinally separated locations, moving means for continuously moving the casing between the first and second clamping means, and means for heating and curving the inflated casing into the shape of a helical coil, the heating and curving means being located intermediate the first and second clamping means; the improvement wherein the heating and curving means comprises means for selectively heating a first portion of the circumference of the inflated sausage casing without contacting the first portion with a solid surface; and further comprising support means for supporting and conveying an inflated casing, the support means being adjacent the heating means, between the heating means and the first clamping means; at least one rotatable deflecting member disposed adjacent the selective heating means, between the heating means and the second clamping means, so as to contact a second circumferential portion of the inflated heated casing diametrically opposite to the selectively heated first circumferential portion; drive means for rotating the deflecting member; and a bending support member immediately adjacent the heating means and extending from the heating means towards the deflecting member, the bending support member and the deflecting member being so relatively disposed that an inflated casing passing therebetween will be continuously moved and directed into a curved path limited thereby.

4,336,223

ULTRAVIOLET METHOD FOR DISINFECTION AND STERILIZATION OF FLUIDS

Leon Hillman, 141 Pine Ter., Demarest, N.J. 07626

Filed Apr. 18, 1980, Ser. No. 141,558
Int. Cl.³ A61L *2/10*
U.S. Cl. 422—24 **9 Claims**



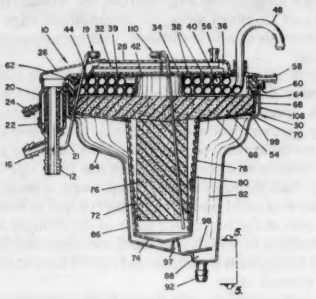
1. The method of destroying undesirable micro-organisms in a fluid utilizing ultraviolet radiation comprising passing said fluid in proximity to at least one electrically energized ultraviolet radiation source, measuring at least selected physical characteristics of said fluid including turbidity and the rate of flow of said fluid and operating conditions of said source including source intensity and radiation absorption and periodically modifying the relationship of at least said rate of flow to said source intensity in accordance with said physical characteristics to continuously impart a predetermined quantity of energy to said fluid per unit volume thereof, said quantity of energy being predetermined based on said measured physical characteristics to provide the desired destruction of micro-organisms.

4,336,224

BUBBLE OXYGENATOR

George G. Siposs, Costa Mesa, Calif., assignor to Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 3,994, Jan. 16, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,779
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—46 **58 Claims**



1. A blood oxygenator comprising:

a substantially rigid housing;

means defining an interior flow path between an upper portion of said housing and a lower portion of said housing;

blood foaming means carried by said housing and comprising blood and oxygen inlet passageways for providing a flow of oxygen bubbles into venous blood to create a blood foam, said blood foaming means communicating with said flow path in said upper portion of said housing to direct the flow of blood foam thereinto;

said flow path including a substantially horizontal imperforate plate disposed in said upper portion of said housing to receive blood foam from said foaming means in a direction substantially parallel thereto, and a substantially horizontal perforate plate carried in said upper portion of said housing, below said imperforate plate to receive blood foam flowing over the edge thereof, said perforate plate having perforations to permit blood foam to flow downwardly therethrough;

defoaming means carried in said flow path below said perforate plate to separate liquid blood and gas thereby defoaming the blood; and

an arterial blood reservoir, including outlet means therefrom, defined in said lower portion of said housing and communicating with said flow path to collect liquid blood from said defoaming means.

5. A blood oxygenator comprising:

a substantially rigid body, gas venting passages in said body to vent gas from said body;

a substantially vertical venous blood passage, a tubular cylindrical porous sparger having said venous blood passage extending therethrough, an oxygen chamber around said tubular sparger so that oxygen bubble flow enters the venous blood passage through said sparger to foam the venous blood, a blood foam passage from the top of said sparger to the top of said body;

a generally horizontal heat exchanger comprising a flat wound tubular coil in said body and passage means for delivering blood foam down through said heat exchanger;

a defoamer directly positioned beneath said heat exchanger so that gravitationally delivered downwardly flowing temperature controlled blood foam is delivered to said defoamer and liquid blood and gas are downwardly delivered from said defoamer; and

an arterial blood reservoir in said body below said defoamer

so that blood from said defoamer gravitates into said arterial blood reservoir.

4,336,225

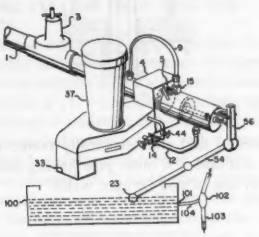
WATER DECONTAMINATION APPARATUS

William E. Hanford, Jr., 5613 Overlea Rd., and William E. Hanford, Sr., 4956 Sentinel Dr., both of Bethesda, Md. 20016

Continuation of Ser. No. 45,278, Jun. 4, 1979, abandoned, which is a continuation of Ser. No. 727,168, Sep. 27, 1976, abandoned. This application Apr. 24, 1981, Ser. No. 257,176

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—106 **6 Claims**



1. Apparatus for automatically injecting a chemical into a pressurized line of contaminated water comprising:

an erosion feeder containing a supply of said chemical in solid form, for receiving water from said line under pressure and operative under control of a control mechanism to produce a solution of said chemical of adjustable strength; said erosion feeder including a pair of chambers, means for dividing the water from said line to flow through each of said chambers, an adjustable holder containing said chemical and extending into one of said chambers, such that the portion of water which flows through said one of said chambers is subjected to said chemical and erodes said chemical, and means for recombining the flow through said chambers to obtain said solution of adjustable strength; said erosion feeder including flow restrictor means for increasing the amount of water in said one of said chambers so as to produce solution of increased concentration;

a crock for holding solution produced by said erosion feeder;

passive injection means for injecting solution from said crock into said line; and

volume sensing means for activating and deactivating said control mechanism as a function of the volume of solution in said crock.

4,336,226

VANADIUM HYDRIDE DEUTERIUM-TRITIUM GENERATOR

Leslie D. Christensen, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1980, Ser. No. 129,867

Int. Cl.³ G05D *23/00, 16/00*

U.S. Cl. 422—109 **9 Claims**

1. A gas generator for supplying deuterium-tritium gas in a series of pressure increments, comprising:

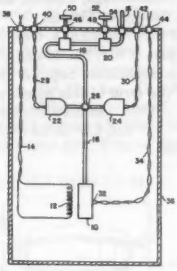
a high pressure chamber filled with a deuterium-tritium hydride which produces a deuterium-tritium gas pressure when heated;

a heater surrounding the chamber and in thermal contact therewith to heat the deuterium-tritium hydride;

a pressure transducer connected to the chamber to measure the deuterium-tritium gas pressure, producing a signal proportional to the deuterium-tritium gas pressure;

a programmed controller producing a signal representing the desired pressure at a given time, the desired pressure corresponding to a series of preselected pressure increments over a preselected period of time;

a comparator to compare the pressure transducer signal to the programmed controller signal and to produce a difference signal therebetween; and



a power controller connected to the output of the comparator and actuated by the difference signal, the output of the power controller being connected to the heater to actuate the heater to heat the hydride through the series of pressure increments to produce the desired gas pressure.

4,336,227

FLUIDIZED BED REACTOR

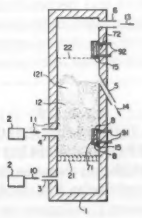
Shuntaro Koyama, Hitachi; Tomohiko Miyamoto, Takahagi, and Mizuho Hirato, Hitachi, all of Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 125,086

Claims priority, application Japan, Feb. 27, 1979, 54-21332

Int. Cl.³ G05D *7/00, 16/00;* **B01J** *8/18;* **F27B** *15/08*

U.S. Cl. 422—111 **4 Claims**



1. A fluidized bed reactor including a reactor vessel vertically divided into upper, middle and lower regions by spaced two gas distributors, a gas inlet communicated with the lower region, a solid inlet communicated with the middle region to introduce particles to be treated, a gas outlet communicated with the upper region, and a solid overflow pipe communicated with the middle region of the reactor vessel, the improvement comprising

a first detector vessel mounted near the inside surface of the middle region of the reactor vessel and adapted to pass gas flowing in the region,

a second detector vessel mounted in the upper region and adapted to pass gas flowing in the region,

detecting particles contained in the first and second detector vessels and having larger minimum fluidizing velocities than that of the particles to be treated,

a first and second pressure drop measuring means for measuring pressure drops across said detecting particles contained in the first and second detector vessels, respectively, and

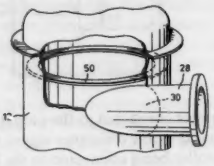
control means controlling supply quantities of said gas and said particles to be treated based on the pressure drops measured by said pressure drop measuring means.

4,336,228

CHLORINE DIOXIDE GENERATOR

Gerald Cowley, Mississauga, Canada, assignor to ERCO Industries Limited, Islington, Canada

Division of Ser. No. 82,853, Oct. 9, 1979, which is a continuation-in-part of Ser. No. 964,681, Nov. 29, 1978, Pat. No. 4,203,961. This application Sep. 22, 1980, Ser. No. 189,645
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ B01J *8/00*
U.S. Cl. 422—129 **12 Claims**



1. A chlorine dioxide generator, comprising:
a generally right cylindrical vertically-extending body having upper and lower end closures, gaseous outlet means located in or adjacent to said upper end closure and slurry outlet means located in or adjacent to said lower end closure,
inlet means arranged tangentially to said cylindrical body terminating at its downstream end in communication with the interior of said body above the intended liquid level therein and below said gaseous outlet means for projection of reaction mixture into said body generally tangentially thereto,
planar ring baffle means projecting substantially horizontally inwardly from and perpendicularly with respect to the internal wall of said cylindrical body and located immediately above the upper extremity of the downstream termination of said inlet means.

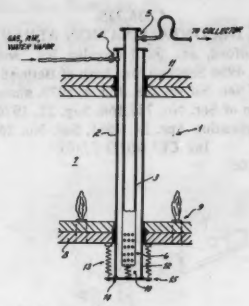
4,336,229

APPARATUS FOR THE PRODUCTION OF AMMONIA SYNTHESIS GAS FROM PURIFIED COKE OVEN GAS

Egmar Wunderlich, Mülheim; Joachim Meckel, Heiligenhaus; Dietrich Wagener, and Stefan Smieskol, both of Essen, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,566
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948107
Int. Cl.³ C01C *1/04*; B01J *8/04, 8/06*
U.S. Cl. 422—148 **5 Claims**

1. Apparatus for the production of ammonia synthesis gas by the catalytic cracking of coke oven gas in the presence of water vapor and air comprising means defining a furnace having opposing walls, a first pipe extending through said furnace walls with the ends thereof situated exterior to said walls and furnace, coke oven gas, water vapor and air, the other end thereof being closed, a second pipe mounted inside said first pipe and having a first end and a second end opposite said one end of said first outer pipe, said second end being perforate about its periphery so that said second pipe is in gas flow communication with said first outer pipe at said second end, said first outer pipe and said second pipe defining a first reaction zone therebetween and said second pipe defining a second reaction zone interiorly thereof, each said reaction zone containing a different catalyst, and means communicating with the interior of said second pipe at said first end for removing the cracked gas from the apparatus, said second pipe having one of said ends rigidly connected to said first outer pipe



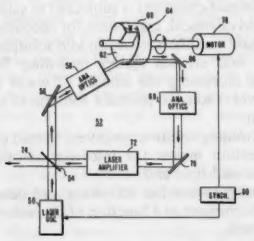
and the other of said ends elastically connected to said first outer pipe, and said first outer pipe having one end elastically connected to one of said furnace walls.

4,336,230

FREQUENCY CHIRP IN ISOTOPICALLY SELECTIVE PHOTOEXCITATION

Hans A. Bethe, Ithica, N.Y., and Ching S. Chang, Malden, Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Dec. 20, 1977, Ser. No. 862,409
Int. Cl.³ B01D *59/00*
U.S. Cl. 423—3 **33 Claims**



1. A system for producing photoexcitation comprising:
means for generating an environment of particles;
means for applying to said environment a first frequency of electromagnetic radiation tuned for producing excitation of particles of said environment in a first transition from a low-lying energy state to a first excited energy level below ionization;
means for applying to said environment further electromagnetic radiation to produce excitation of particles at said first excited level in a second transition to a second excited level below the ionization level; and
means for producing for a substantial portion of the particles an at least instantaneous exact energy correspondence between said first and second transitions combined and said radiation of first and further frequencies combined by sweeping only the frequency of radiation producing said second transition over a selected frequency range within a selected interval of time whereby to increase the efficiency of photoexcitation from said low-lying energy state to said second excited state.

4,336,231
COPPER EXTRACTION WITH EITHER SALICYLALDOXIMES OR BENZOPHENONE OXIMES AND ALKYLPHENOLS

Raymond F. Dalton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 965,498, Dec. 1, 1978, Pat. No. 4,231,888, which is a division of Ser. No. 756,067, Jan. 3, 1977, Pat. No. 4,142,952. This application May 23, 1980, Ser. No. 152,828

Claims priority, application United Kingdom, Jan. 30, 1976, 3788/76; Jun. 15, 1976, 24722/76; Oct. 21, 1976, 43711/76

The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.³ C01B *13/18;* **C01G** *3/00*

U.S. Cl. 423—24 **17 Claims**

1. A process for extracting copper values from aqueous solutions of copper salts which comprises the steps of (a) contacting the aqueous solution with a solution in a water-immiscible, organic solvent of (1) o-hydroxyaryloximes selected from the group consisting of a mixture of 5-nonylsalicylaldoximes, a mixture of 5-heptylsalicylaldoximes and a mixture of 2-hydroxy-3-chloro-5-nonylbenzophenone oximes and (2) an alkylphenol containing from 3 to 15 alkyl carbon atoms, (b) separating from the aqueous phase the solvent phase containing copper in the form of a complex with the indicated o-hydroxyaryloxime, (c) contacting the solvent phase with an aqueous mineral acid, and (d) separating the solvent phase from the aqueous phase containing copper in the form of a salt with the mineral acid, the amount of (2) in said solvent being in the range of 0.1 to 20 times the weight of (1) and such that with the other conditions used, the overall copper recovery resulting from steps (a) to (d) is greater than when (2) is not included, the pH during the contacting step (a) being such that the complex which is formed is stable.

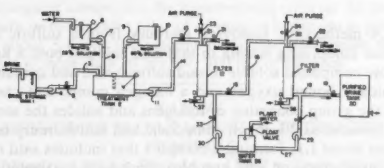
4,336,232
PRODUCTION OF PURIFIED BRINE

George J. Moritz, Rte. 4, Box 126, Clarks Summit, Pa. 18411

Continuation of Ser. No. 896,379, Apr. 14, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,686

Int. Cl.³ C01F *5/22, 11/18*

U.S. Cl. 423—164 **21 Claims**



11. A process for the purification of salt brine having magnesium and calcium hardness which comprises treating a saturated salt brine containing magnesium and calcium ions initially with an alkali metal carbonate and then with an alkali metal hydroxide in amounts in excess of stoichiometric proportions to form firm, readily settleable, filterable floc precipitate particles of insoluble compounds of magnesium and calcium, suspended in the treated brine; passing the resultant suspensions to a filtering unit to separate and remove the floc precipitate and to provide a purified salt brine; from 0.6 g/l to 1.0 g/l of the alkali metal carbonate being added in excess of the stoichiometric proportions to said salt brine and from 1.0 g/l to 2.0 g/l of the alkali metal hydroxide being added in excess of stoichiometric proportions to said salt brine the treatment with the alkali metal carbonate and then with the alkali metal hydroxide being capable of forming said filterable floc precipitate particles within a period of not more than two hours after introduction of said alkali metal carbonate into said saturated salt brine and filtering the resultant suspension of filterable floc precipitate particles with said filtering unit to provide said purified salt brine.

4,336,233
REMOVAL OF CO_2 AND/OR H_2S AND/OR COS FROM GASES CONTAINING THESE CONSTITUENTS

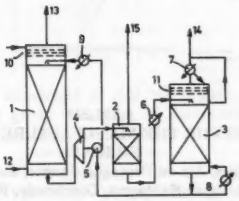
Max Appl, Dannstadt-Schauernheim; Ulrich Wagner, Limburgerhof; Hans J. Henrici, Mannheim; Klaus Kuessner, Heuchelheim; Klaus Volkamer, Frankenthal, and Ernst Fuerst, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 944,291, Sep. 21, 1978, abandoned, which is a continuation of Ser. No. 736,345, Oct. 28, 1976, abandoned. This application Aug. 13, 1980, Ser. No. 177,615

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551717

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 **9 Claims**



1. In a process for removing CO_2, H_2S or both as constituents from gases by washing the gases with an aqueous solution of a scrubbing liquid and subsequently regenerating the scrubbing liquid, the improvement which comprises: using a scrubbing liquid which contains

(a) from about 0.05 to 0.8 mole/l of piperazine as an absorption accelerator and

(b) from about 1.5 to 4.5 moles/l of methyldiethanolamine, and

carrying out the washing of the gases with the scrubbing liquid at temperatures of from about 40° C. upward.

4,336,234
PREPARATION OF STORAGE-STABLE, PUMPABLE AND POURABLE ALUMINOSILICATE SUSPENSIONS BY WET MILLING

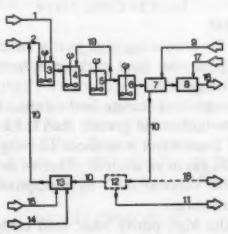
Bernd Leutner, Frankenthal; Hans-Ulrich Schlimper, Speyer; Dieter Roth, Frankenthal; Ludwig Kreitner, Heppenheim, and Heinrich Spahn, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,957

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1979, 2907108

Int. Cl.³ C01B *33/28;* **B01J** *13/00*

U.S. Cl. 423—329 **5 Claims**



1. A process for the preparation of storage-stable, pourable

and pumpable aqueous suspensions without the use of dispersants or stabilizers which contain, based on the suspension, from 20 to about 60 percent by weight of finely divided, water-soluble aluminosilicates with calcium-exchangeable cations, comprising the steps of:

mechanically separating the aluminosilicates which are obtained in aqueous suspension after their preparation,

wet milling the resulting moist aluminosilicate mass without intermediate drying, either directly or after having added water to bring its water content to a value of up to 80 percent by weight to an average particle size of 1 to 5 μm, and

bringing the resulting milled material, where necessary, to the desired solids content to produce a storage-stable, pourable and pumpable aqueous suspension, without the use of dispersants or stabilizers, which contains from 20 to about 60 percent, based on the suspension, of finely divided, water-insoluble aluminosilicates with calcium-exchangeable cations.

4,336,235

PROCESS FOR THE MANUFACTURE OF SODIUM SILICATE

Jean Deabriges, Aix-en-Provence, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jun. 20, 1980, Ser. No. 161,437

Claims priority, application France, Jul. 25, 1979, 79 19149

Int. Cl.³ C01B *33/32*

U.S. Cl. 423—332 **6 Claims**

1. A process for the manufacture of a sodium silicate solution in a continuous manner from a silicon dioxide-containing material, comprising continuously adding to a reaction zone a stream of said silicon dioxide-containing material and a stream of a sodium hydroxide-sodium carbonate solution, reacting said silicon dioxide-containing material and said sodium hydroxide-sodium carbonate at a temperature of from about 225° to 245° C. and pressure of from about 27 to 32 bars for a time of from about 20 to 35 minutes, and recovering said sodium silicate solution from the reaction zone.

4,336,236

DOUBLE PRECIPITATION REACTION FOR THE FORMATION OF HIGH PURITY BASIC LEAD CARBONATE AND HIGH PURITY NORMAL LEAD CARBONATE

Michael A. Kolakowski, Milltown, N.J., and John J. Valachovic, Fremont, Calif., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,441

Int. Cl.³ C01G *21/14*

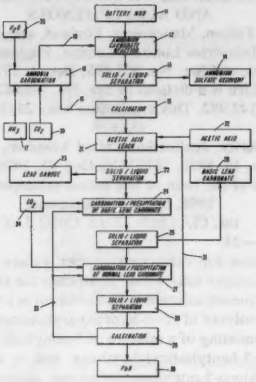
U.S. Cl. 423—435 **17 Claims**

1. A process for producing high purity basic lead carbonate and high purity normal lead carbonate from a single feed solution comprising:

(a) first contacting a lead acetate feed solution having an initial lead to acetate mole ratio greater than 0.5:1 and a lead concentration of from about 1 to about 10 weight percent with carbon dioxide gas in an amount effective to reduce the lead to acetate mole ratio to 0.5:1 by precipitating high purity basic lead carbonate;

(b) separating the high purity basic lead carbonate from the remaining lead acetate solution;

(c) then contacting the remaining lead acetate solution with carbon dioxide gas to precipitate high purity normal lead carbonate; and



(d) separating the high purity normal lead carbonate from the remaining reactive acetate solution.

4,336,237

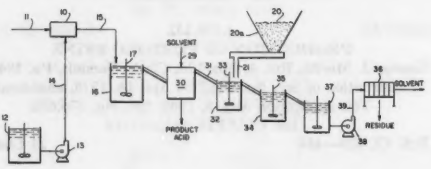
REMOVAL OF MERCURY FROM SULFURIC ACID

Val Kudryk, Closter, and Martin Goffman, Edison, both of N.J., assignors to Asarco Incorporated, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,999

Int. Cl.³ C01B *17/90*; B01D *23/10*

U.S. Cl. 423—531 **16 Claims**



1. A method for removing mercury from a sulfuric acid solution comprising adding to said acid solution both a liquid organic compound soluble in said sulfuric acid and containing chemically bound oxygen and a halogen component chosen from the group consisting of halogens and halides the atomic ratio between said halogen component and said mercury being at least about 1:1, forming a complex that includes said mercury, and removing said complex from said acid solution.

4,336,238

PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Augustine I. Dalton, Jr.; Eugene J. Greskovich, and Ronald W. Skinner, all of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 10, 1980, Ser. No. 195,828

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 **11 Claims**

1. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in a reaction vessel in the presence of an acidic aqueous liquid containing 70 to 95% by volume of an oxygenated or nitrogeneous organic solvent capable of inhibiting the decomposition of thus-produced hydrogen peroxide, the improvement comprising prolonging effective catalyst life and improving hydrogen peroxide yield by continuously removing from the acidic aqueous liquid in the reaction vessel palladium salts produced by solubi-

lization of the palladium catalyst, wherein hydrogen, oxygen and acidic aqueous liquid are cocurrently passed upwardly through a packed bed of palladium on a carbon base.

11. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in a reaction vessel in the presence of an acidic aqueous liquid capable of inhibiting the decomposition of the thus-produced hydrogen peroxide, the improvement comprising prolonging effective catalyst life and improving hydrogen peroxide yield by continuously removing from the acidic aqueous liquid in the reaction vessel palladium salts produced by solubilization of the palladium catalyst, wherein removal of palladium salts is effected by an ion-exchange resin external to the reaction vessel in which hydrogen peroxide is prepared and aqueous liquid freed of palladium salts is returned to the reaction vessel.

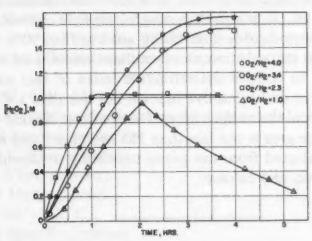
4,336,239
SYNTHESIS OF HYDROGEN PEROXIDE

Augustine I. Dalton, Jr., and Ronald W. Skinner, both of Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 195,827, Oct. 10, 1980. This application Dec. 22, 1980, Ser. No. 219,402

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 **12 Claims**



1. In a process for the synthesis of hydrogen peroxide from hydrogen and oxygen, in the presence of a Group VIII noble metal catalyst deposited on a solid support, in an acidic medium containing an oxygenated organic compound or a nitrogenous organic compound, the improvement wherein the partial pressure or molar ratio ratio of oxygen to hydrogen is greater than about 3.4 and the amount of Group VIII noble metal catalyst is more than 30 mg. per 100 ml. of medium.

4,336,240
METHOD OF MANUFACTURING HYDROGEN PEROXIDE

Fred Moseley, Cobham, England, and Paul N. Dyer, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 22, 1981, Ser. No. 256,438

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—584 **10 Claims**

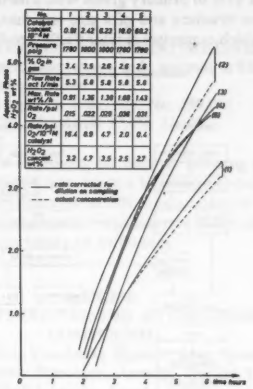
1. A process for producing hydrogen peroxide wherein a gaseous mixture comprising hydrogen and oxygen is contacted with a catalyst in the presence of water and an organic solvent wherein:

(i) the organic solvent is immiscible with water and unreactive with hydrogen peroxide under the contacting conditions;

(ii) the distribution coefficient for hydrogen peroxide between the water and the organic solvent is greater than 1;

(iii) the catalyst is of the formula L_2MX_2 wherein L is a ligand represented by the formula A R_1 R_2 R_3 wherein R_1 R_2 and R_3 are alkyl, cycloalkyl or aryl groups, hydrogen or halogen, A is a Group 5*b* element selected from the group consisting of nitrogen, phosphorous and arsenic, M is a Group 8 metal and X is halogen, said catalyst being soluble in said organic solvent and insoluble in water; and

(iv) the gaseous mixture is non-ignitable under the process conditions



the improvement comprised in that the organic solvent is selected from the group consisting of fluorocarbons, halofluorocarbons and mixtures thereof.

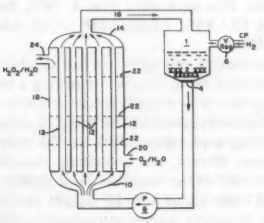
4,336,241
PROCESS FOR HYDROGEN PEROXIDE PRODUCTION FROM HYDROGEN AND OXYGEN

Steven E. Diamond, New Providence, N.J.; Benjamin S. Tovrog, Naperville, Ill.; Frank Mares, Whippany, and Reginald T. Tang, Bridgewater, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 18, 1981, Ser. No. 244,844

Int. Cl.³ C01B *15/02*

U.S. Cl. 423—588 **5 Claims**



1. In a process for production of hydrogen peroxide involving stages of (1) oxidation with elemental oxygen of a 2-alkyl-9,10-dihydroxyanthracene, dissolved in an organic solvent, to the corresponding alkylanthraquinone, and (2) catalytic hydrogenation of said dissolved alkylanthraquinone back to said alkyldihydroxyanthracene, the improvement which comprises catalyzing said hydrogenation by use of a water-insoluble (bipyridyl)rhodium complex as hydrogenation catalyst.

4,336,242
HARD FERRITE POWDER AND PROCESS FOR THE PREPARATION THEREOF

Rainer Schmidberger, Bermatingen, and Hilmar Franke, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Dornier System GmbH., Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,302

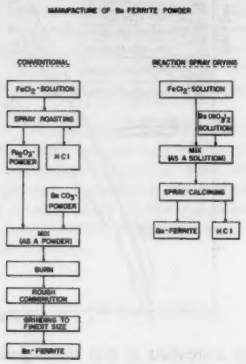
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1978, 2850108

Int. Cl.³ C01G *49/00*

U.S. Cl. 423—594 **12 Claims**

1. A process for preparing a hard ferrite powder of the composition $BaO{\cdot}6Fe_2O_3$, said powder being composed of

particles in the size range of about 1 to 10 microns which can be easily comminuted into primary grains and containing at least about 85% of primary grains with a hard magnetic hexagonal lattice structure and of a size less than, or equal to, 0.5 micron, which comprises spraying a 0.05 to 0.3 molar aqueous



solution, based upon the product $BaFe_{12}O_{19}$, of ferrous chloride and barium nitrate into a hot zone of a reaction vessel, with the droplet size of said spray being less than about 30 microns, and with particles in the hot zone having a dwell time of about 2–10 seconds at a temperature of about 700° to 900° C.

4,336,243

TRANSDERMAL NITROGLYCERIN PAD

Dilip R. Sanvordeker, Elk Grove; James G. Cooney, Des Plaines, and Ronald C. Wester, Glenview, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 177,042, Aug. 11, 1980, abandoned. This application May 4, 1981, Ser. No. 260,517

Int. Cl.³ A61L *15/03;* **A61F** *13/00;* **A61K** *9/70*

U.S. Cl. 424—28 **6 Claims**

1. A microsealed, nitroglycerin pad suitable for transdermal administration of nitroglycerin comprising a backing, a biologically acceptable silicone polymer matrix affixed to said backing, said silicone polymer matrix being of cross-linked silicone rubber having a plurality of 10 to 200 micron microsealed compartments therein, and containing therein from 10 to 30 volume percent of an aqueous hydrophilic solvent system comprising from about 6 to 22 weight percent of a mixture containing 10 weight percent nitroglycerin mixed with lactose therein, and from 5 to 15 weight percent of a hydrophobic solvent system, said hydrophobic solvent system being selected from the group consisting of mineral oil, a triglyceride of a saturated coconut oil acid and mixtures thereof, and said hydrophilic solvent being a polyethylene glycol.

4,336,244

COLORED MEDICINAL TABLET, NATURAL COLOR PIGMENT AND METHOD FOR USING THE PIGMENT IN COLORING FOOD, DRUG AND COSMETIC PRODUCTS

Edward J. Woznicki, Douglassville; Lawrence J. Rosania, North Wales, and Keith Marshall, Fort Washington, all of Pa., assignors to Colorcon, Inc., West Point, Pa.

Continuation of Ser. No. 837,301, Sep. 27, 1977, Pat. No. 4,274,830. This application Apr. 28, 1980, Ser. No. 144,617

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ D06P *3/58;* **A61K** *47/00, 9/36*

U.S. Cl. 424—35 **16 Claims**

7. A method of coloring a pharmaceutical tablet comprising:
suspending a natural water insoluble edible powder in water, said powder consisting of powders of cellulose, microcrystalline cellulose, cellulose derivatives, ethyl cellulose, starch, or starch derivatives,
dyeing the suspended powder with an edible natural dye,
fixing the dye with hydrochloric acid or sodium chloride or aluminum sulfate or sodium hydroxide,
removing the water to obtain a powdered natural dye pigment,
suspending the pigment in a coating solution, and
coating the tablet with the coating solution.

4,336,245

NOVEL PRECIPITATED SILICEOUS PRODUCTS AND METHODS FOR THEIR USE AND PRODUCTION

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 876,284, Feb. 9, 1978, abandoned, which is a continuation of Ser. No. 557,707, Mar. 12, 1975, abandoned. This application May 11, 1979, Ser. No. 39,061

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **12 Claims**

1. A dentifrice including, as a thickening and polishing agent, a finely divided, amorphous, precipitated silicon dioxide having the combined properties of a structure index of less than 505 and an oil absorption of greater than 190 cc/100 grams; said silicon dioxide comprising not less than 90% SiO_2 and including a metal cation incorporated therein, said metal cation serving to control the refractive index of said silicon dioxide such that said refractive index is not less than 1.45 and serving to control the surface area of said silicon dioxide such that said surface area is not less than 153 m^2/gram, said metal cation being selected from the group consisting of aluminum, magnesium, zinc, and calcium.

4,336,246

HAIR MAKEUP PRODUCTS

Diane Leon-Pekarek, Sloatsburg, N.Y., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Apr. 3, 1980, Ser. No. 136,776

Int. Cl.³ A61K *7/06, 31/74, 7/13*

U.S. Cl. 424—70 **4 Claims**

1. A hair makeup product comprising a waxy base, at least one color additive, at least one volatile solvent, and from about 1 to 30% by weight, based on the total weight of the product, of a film-forming resin composition comprising pentaerythritol rosinate and a resin selected from ethyl hydroxyethyl cellulose, a polyvinyl alkyl ether, or mixtures thereof.

4,336,247

BODY SYSTEM NUTRIENT MATERIAL

Arthur E. Eriksen, P.O. Box 965, Wylie, Tex. 75098

Continuation of Ser. No. 939,369, Sep. 5, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,741

Int. Cl.³ A61K *31/365, 35/12, 35/56*

U.S. Cl. 424—95 **2 Claims**

1. A body system nutrient material comprised of freeze dried mussel material in particulate powder form wherein substantially all cell surface of said mussel material are coated with ascorbic acid, said material being prepared by freeze drying mussel meats and body fluids, grinding said freeze dried mussel meats and body fluids to a fine particulate state, adding an aqueous or alcoholic solution of ascorbic acid in an amount to saturate said freeze dried mussel material and subjecting said saturated mussel material to a dehydration step to remove the fluid, said ascorbic acid being present in the range of from 5 to 50% by weight of the nutrient material.

4,336,248

PREPARATION OF COUPLED HEMOGLOBIN MOLECULES

Klaus Bonhard, Hanau, and Uwe Boysen, Frankfurt, both of Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1975, Ser. No. 624,220

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1974, 2449885

Int. Cl.[3] A61K *35/14;* C07G *7/00;* C07C *103/52;* A61K *37/00*

U.S. Cl. 424—101 12 Claims

1. A chemically modified, stable hemoglobin preparation suitable for blood replacement and for organ perfusion, comprising hemoglobin molecules coupled to one another or to another protein selected from the group consisting of serum proteins and gelatin derivatives by a coupling reagent comprising an aliphatic dialdehyde having 3 to 8 carbon atoms, molar ratio of the coupling reagent to the hemoglobin being about 6:1 to about 18:1, the preparation having a capacity to transport oxygen corresponding approximately to that of free hemoglobin, and a blood residence time which is at least about twice that of free hemoglobin.

4,336,249

ANTIBIOTIC SUBSTANCE

Mamoru Arai; Akio Torikata; Ryuzou Enokita; Tatsuo Haneishi, and Mutsuo Nakajima, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,501

Claims priority, application Japan, May 24, 1978, 53/62042

Int. Cl.[3] A61K *35/00*

U.S. Cl. 424—121 3 Claims

1. An antibiotic substance, Mycoplanecin, characterized by the following properties:

(1) Colour and state
White powder;

(2) Melting point
161°–167° C.;

(3) Specific rotation
$[\alpha]^{21}_{D}$-66° (C=0.4, chloroform);

(4) Elemental analysis
C, 61.78%; H, 8.48%; N, 11.75%; (after drying to constant weight)

(5) Ultraviolet absorption spectrum
Only terminal absorption as shown in FIG. 1 of the accompanying drawings, when measured at 20 μg/ml in 50% v/v aqueous methanolic solution;

(6) Infrared absorption spectrum
The spectrum, measured in a KBr disc, is shown in FIG. 2 of the accompanying drawings;

(7) Nuclear magnetic resonance spectrum
The spectrum, as measured in deuterochloroform as solvent and with tetramethylsilane (TMS) as internal standard, is shown in FIG. 3 of the accompanying drawings;

(8) Solubility
Soluble in methanol, ethanol, ethyl acetate, acetone and chloroform;
sparingly soluble in benzene;
insoluble in water;

(9) Colour reaction
Brown-coloured with 50% v/v aqueous sulphuric acid; positive for iodine and potassium permanganate on silica gel thin layer chromatograms; negative for ninhydrin and 2,4-dinitrophenylhydrazine;

(10) Amino acid composition
1 mole each of glycine, proline, leucine, 2-amino-5-methylhexanoic acid, N-methylthreonine, N-methylleucine, methylproline and ethylproline, and 2 moles of N-methylvaline detected after hydrolysis with 6 N hydrochloric acid at 105° C. for 20 hours;

(11) Antibacterial activity
Strong antibacterial activity against various bacteria of the genus Mycobacterium.

4,336,250

LACTATION IMPROVEMENT METHOD

Curtis C. Scheifinger, Morristown, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 20, 1981, Ser. No. 255,901

Int. Cl.[3] A61K *37/00, 31/70*

U.S. Cl. 424—177 8 Claims

1. A method for improving lactation in lactating ruminants comprising orally administering to a lactating ruminant having a developed rumen function an effective amount of an antibiotic which is a member of the virginiamycin family of antibiotics or the elfamycin family of antibiotics.

4,336,251

MEDICAMENTS CONTAINING AN ORGANOSILICON COMPOUND

Shigeshi Toyoshima, Funabashi; Ryuichi Sato, Urawa; Koichi Ito, Tokyo; Toshio Shinohara, Annaka; Yasushi Yamamoto, Takasaki, and Shoji Ichinohe, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 64,805, Aug. 8, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,359

Claims priority, application Japan, Aug. 15, 1978, 53-99196

Int. Cl.[3] A61K *31/695*

U.S. Cl. 424—184 7 Claims

1. A method for treating hypertension in human patients comprising administering to the patient a medicament composed of a carrier and an anti-hypertensive effective amount of an organosilicon compound represented by the formula

$$R_3Si(CH_2)_nCOOH,$$

where

R denotes an alkyl group having from 1 to 6 carbon atoms, and

n is an integer from 1 to 5 inclusive,

or a therapeutically acceptable salt thereof.

4,336,252

1-CYCLOALKYL PHOSPHONIUM SALTS

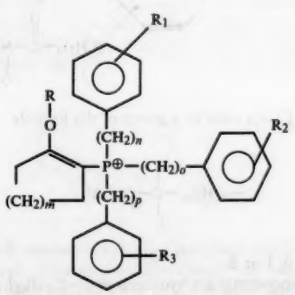
Richard A. Mueller, Glencoe, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Aug. 6, 1980, Ser. No. 175,790

Int. Cl.[3] A01N *9/36;* A61K *31/66;* A61L *13/00;* C07F *9/54*

U.S. Cl. 424—198 34 Claims

1. A 1-cycloalkylphosphonium salt represented by the formula



wherein: R is selected from the group consisting of lower alkyl, hydroxy lower alkyl, halo lower alkyl, amino lower alkyl, cyano lower alkyl, lower alkenyl with the limitation that

the double bond is not on the carbon atom attached to the oxygen atom, benzyl, substituted benzyl and

wherein q is 0 or 1 and R_4 is selected from the group consisting of hydroxy, loweralkoxy, phenyl, substituted phenyl, and

wherein R_5 and R_6 are the same or different members of the group consisting of hydrogen and lower alkyl or taken together form a 5 or 6 membered ring; m is 1, 2 or 3; n is 0 or 1; o is 0 or 1; p is 0 or 1; R_1, R_2 and R_3 are the same or different members of the group consisting of hydrogen, lower alkyl, lower alkoxy and halo; and X is a pharmaceutically acceptable anion.

33. A method of treating pain in mammals comprising administering a therapeutically effective amount of a compound of claim **1**.

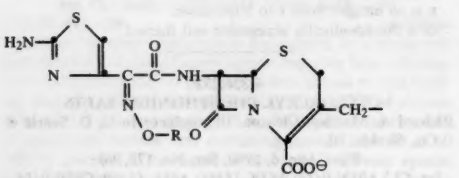
4,336,253

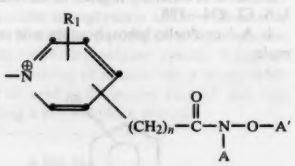
CEPHALOSPORIN ANTIBIOTICS

William H. W. Lunn, and John K. Shadle, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

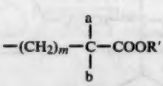
Filed Mar. 11, 1981, Ser. No. 242,792
Int. Cl.³ C07D *501/38*
U.S. Cl. 424—246 **30 Claims**

1. A compound of the formula





wherein R is C_1–C_4 alkyl or a group of the formula



wherein m is 0, 1 or 2;

a and b independently are hydrogen or C_1–C_3 alkyl, or a and b taken together form a 3 to 6 membered carbocyclic ring; and R′ is hydrogen or a carboxy protecting group;

R_1 is hydrogen or C_1–C_4 alkyl;

n is 0, or an integer from 1 to 3;

A and A′ independently are hydrogen, allyl, or C_1–C_4 alkyl; and the pharmaceutically acceptable, non-toxic, salts thereof.

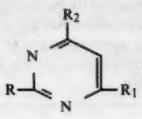
4,336,254

GUANIDINOPYRIMIDINE COMPOUNDS, COMPOSITIONS AND METHOD OF USING AS A DIURETIC

David L. Ladd, Overbrook Hills, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 24, 1981, Ser. No. 247,048
Int. Cl.³ A61K *31/505;* **C07D** *239/30, 239/48, 239/50*
U.S. Cl. 424—251 **11 Claims**

1. A basic compound of the formula:



in which:

R and R_1 are guanidino or amino, at least one being guanidino; and

R_2 is hydrogen, halo or amino; together with the pharmaceutically acceptable acid addition salts thereof.

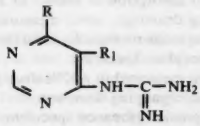
4,336,255

PHARMACEUTICAL COMPOSITIONS CONTAINING GUANIDINOPYRIMIDINES

David L. Ladd, Overbrook Hills, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 24, 1981, Ser. No. 247,049
Int. Cl.³ A61K *31/505;* **C07D** *239/30, 239/48*
U.S. Cl. 424—251 **12 Claims**

1. A method of inducing diuretic activity in a patient in need thereof comprising administering orally or by injection a non-toxic diuretic quantity of a compound of the basic formula:



in which:

R is halo or amino; and

R_1 is amino or nitro; together with the pharmaceutically acceptable, acid addition salts thereof.

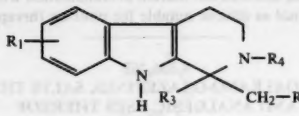
4,336,256

PYRIDOINDOLE DERIVATIVES

Gabor I. Koletar, Berkeley Heights, N.J.; Jonathan B. Frost, Palaiseau, France; Regis DuPont, Paris, France; Patrick Lardenois, Bourge la Reine, France; Claude Morel, Massy, France, and Henry Najer, Paris, France, assignors to Synthelabo, Paris, France

Division of Ser. No. 112,212, Jan. 15, 1980, Pat. No. 4,272,539.
This application Sep. 4, 1980, Ser. No. 184,070
Claims priority, application France, Apr. 26, 1979, 79 10654
Int. Cl.³ C07D *471/04;* **A61K** *31/435*
U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula



wherein

R_1=H, halogen, C_{1-4} alkyl, C_{1-4} alkoxy or CF_3;

R_2=COO(C_{1-4} alkyl);

R_3=H, or COO (C_{1-4} alkyl); and

R_4=H, CH_3CO or CH_3;

or a pharmaceutically acceptable salt thereof.

5. A method of treating a patient for anoxia, comprising administering to the patient in need of such treatment a therapeutically effective dose of a compound as claimed in claim 1.

4,336,257

NOVEL 2-PYRIDYLBENZIMIDAZOLE COMPOUNDS

John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 44,129, May 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 883,629, Mar. 6, 1978, abandoned, which is a division of Ser. No. 755,777, Dec. 30, 1976, abandoned. This application Aug. 8, 1980, Ser. No. 176,237

Int. Cl.[3] A61K *31/415*

U.S. Cl. 424—256 2 Claims

1. A method of treating hypertension in humans which comprises administering an effective amount of a compound selected from 2-(4-pyridyl)-5-chlorobenzimidazole, 2-(3-pyridyl)-1H-imidazo[4,5-b]pyridine, 2-(4-pyridyl)-1H-imidazo[4,5-b]pyridine, 2-(4-pyridyl)-1H-imidazo[4,5-c]pyridine and pharmaceutically acceptable salts thereof.

2. A method of treating gout in humans which comprises administering an effective amount of a compound selected from 2-(4-pyridyl)-5-chlorobenzimidazole, 2-(4-pyridyl)-5,6-dichlorobenzimidazole, 2-(3-pyridyl)-1H-imidazo[4,5-c]-pyridine, 2-(4-pyridyl)-1H-imidazo[4,5-c]pyridine and pharmaceutically acceptable salts thereof.

4,336,258

DERIVATIVES OF EUGENOL AS MEDICAMENTS

Jean Blum, 44-46 rue du Gal Cremer, 92700 Colombes, France

Filed Sep. 26, 1980, Ser. No. 190,982

Claims priority, application France, Sep. 27, 1979, 79 24051

Int. Cl.[3] A61K *31/44, 31/465, 31/455;* C07D *211/90*

U.S. Cl. 424—263 5 Claims

1. A compound consisting of the eugenol ester of N-oxynicotinic acid.

5. A method for the treatment of stomatological disorders comprising the step of applying between 100 and 250 milligrams of a pharmaceutically acceptable ester of eugenol and N-oxynicotinic acid.

4,336,259

CERTAIN AZA-BICYCLO-BENZAMIDE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Michael S. Hadley, Sawbridgeworth, and Francis D. King, Newport, both of England, assignors to Beecham Group Limited, England

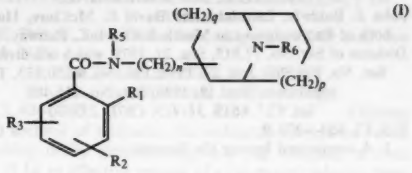
Division of Ser. No. 107,413, Dec. 26, 1979, Pat. No. 4,273,778. This application Oct. 27, 1980, Ser. No. 200,768

Claims priority, application United Kingdom, Dec. 30, 1978, 50380/78; Mar. 15, 1979, 7909262; Aug. 9, 1979, 7927831

Int. Cl.[3] C07D *451/04, 451/14;* A61K *31/46, 31/455*

U.S. Cl. 424—265 37 Claims

1. A compound of the formula (I) and pharmaceutically acceptable salts thereof:



(I)

wherein:

R_1 is a C_{1-6} alkoxy group;

R_2 is hydrogen, halogen, CF_3, C_{2-7} acyl, C_{2-7} acylamino, or amino or aminocarbonyl optionally substituted by one or two C_{1-6} alkyl groups, or nitro;

R_3 is aminosulphone optionally substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphone;

R_5 is hydrogen or C_{1-6} alkyl;

R_6 is C_{1-7} alkyl or a group $—(CH_2)_sR_7$ where s is 0 to 2 and R_7 is a C_{3-8} cycloalkyl group, or a group $—(CH_2)_tR_8$ where t is 1 or 2 and R_8 is C_{2-5} alkenyl or a phenyl group optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4} alkoxy, trifluoromethyl and halogen; and

n, p and q are independently 0 to 2.

33. A pharmaceutical composition having dopamine antagonist activity which comprises a dopamine antagonist effective amount of the compound 5-sulphamoyl-2-methoxy-N-(3′β-[8′benzyl-8′-azabicyclo[3.2.1]octyl])benzamide, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

4,336,260

METHOD AND COMPOSITIONS USING 1-ARYL-1,2,3,4-TETRAHYDRO-β-CARBOLINE-3-CARBOXYLIC ACID FOR TREATING DEPRESSION

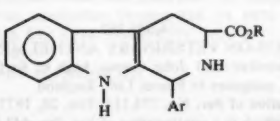
Alan J. Payne, Noblesville; Michael V. Aylott, Thorntown; Jimmie L. Moore, Indianapolis, all of Ind., and Edward M. Yokley, Cambridge, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 858,593, Dec. 8, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 16,757

Int. Cl.[3] A61K *31/44, 31/435, 31/455*

U.S. Cl. 424—266 32 Claims

1. A method for treating depression in a mammal exhibiting the symptoms of central nervous system depression which comprises administering internally to the mammal an effective antidepressant amount of a compound having the formula



wherein R represents hydrogen or a lower alkyl and Ar represents aryl 3,4-methylenedioxyphenyl or substituted aryl wherein the substituted moiety is a member selected from the group consisting of lower alkyl, lower alkoxy, halo, nitro, amino, monoloweralkylamino, and diloweralkylamino, and further including when R is H the pharmaceutically-acceptable salts of the corresponding acids.

4,336,261
ARYLOXYPROPANOLAMINES

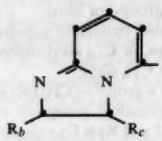
John J. Baldwin, Lansdale, and David E. McClure, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 77,815, Sep. 21, 1979, which is a division of Ser. No. 919,593, Jun. 27, 1978, Pat. No. 4,210,653. This application Dec. 15, 1980, Ser. No. 216,480
Int. Cl.³ A61K *31/415;* C07D *235/30*
U.S. Cl. 424—273 R 8 Claims

1. A compound having the formula

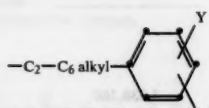
$$R_a—O—CH_2—CHOR—CH_2—NHR^1$$

and pharmaceutically acceptable salts thereof wherein
R_a is



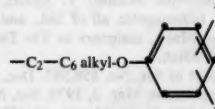
wherein R_b and R_c are H, C_1–C_6 alkyl, SCF_3 or Cl,
R is H or

wherein
L is C_1–C_{10} alkyl, phenyl or mono- or di-substituted phenyl wherein said substituents are C_1–C_4 alkyl, C_1–C_4 alkoxy or halo and
R^1 is a phenyl C_2–C_6 alkyl group having the formula



(a)

or



(b)

wherein Y and Y^1 are H, —OCH_3, —OH, halo or CN, or are joined to form —O—$(CH_2)_{1\ or\ 2}$—O—.

7. Pharmaceutical composition for treating hypertension containing a therapeutically effective amount of a compound of claim 1 and a diluent.

4,336,262
POUR-ON VETERINARY ANTHELMINTIC

Peter J. Brooker, and John Goose, both of Saffron Walden, England, assignors to Fisons Ltd., England

Continuation of Ser. No. 773,111, Feb. 28, 1977, Pat. No. 4,070,467, which is a continuation of Ser. No. 443,522, Feb. 19, 1974, abandoned. This application Sep. 13, 1977, Ser. No. 832,916
Claims priority, application United Kingdom, Feb. 23, 1973, 8972/73; Jan. 25, 1974, 3521/74
Int. Cl.³ A61K *31/425*
U.S. Cl. 424—270 29 Claims

1. A pour-on veterinary composition useful for the treatment of helminthic infestations in animals which comprises an anthelmintically effective amount of tetramisole, levamisole or a nontoxic acid addition salt thereof in combination with ethanol or isopropanol as diluent suitable for pour-on therapy.

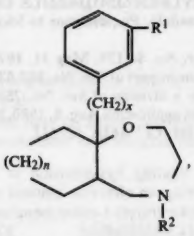
4,336,263
1,4-CYCLOALKANO-OXAZEPINES, SALTS THEREOF AND ANALGESIC USES THEREOF

Hans J. Treiber, Bruehl; Dieter Lenke, Ludwigshafen, and Wolfgang Worstmann, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

PCT No. PCT/EP79/00080, § 371 Date Jun. 26, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO80/00838, PCT Pub. Date May 1, 1980
PCT Filed Oct. 22, 1979, Ser. No. 193,947
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846567
Int. Cl.³ C07D *267/14, 267/12;* A61K *31/395*
U.S. Cl. 424—244 11 Claims

1. A 1,4-Cycloalkano-oxazepine of the general formula I

I



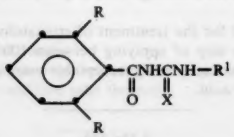
where R^1 is hydrogen, hydroxyl or alkoxy or acyloxy of 1 to 4 carbon atoms, R^2 is a hydrocarbon radical of 1 to 3 carbon atoms, n is 1, 2 or 3 and x is 0 or 1, or one of its salts with physiologically acceptable acids.

4,336,264
1-BENZOYL-3-(ISOXAZOLYL OR BENZISOXAZOLYL)-UREAS AND INSECTICIDAL USE THEREOF

David I. Wickiser, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

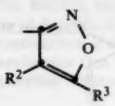
Filed Jun. 19, 1980, Ser. No. 160,805
Int. Cl.³ A01N *43/76;* C07D *263/32, 263/56*
U.S. Cl. 424—272 99 Claims

1. Compound of the formula



wherein each R is independently selected from the group consisting of:
H,
Br,
Cl,
F,
CH_3, or
OCH_3,
with the proviso that R cannot simultaneously represent more than one hydrogen atom, and with the further proviso that when one R moiety represents hydrogen the other R moiety cannot simultaneously represent OCH_3;
X=O or S;

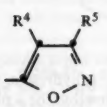
R^1=a 3-isoxazolyl of the formula



R^2=H,
Br,
Cl,
I,
C_1–C_3 alkyl, or
CN;

R^3=tert-butyl, phenyl, or meta- or para-substituted phenyl of which the substituent is chloro, fluoro, C_2–C_4 alkyl, C_2–C_4 alkoxy, $O_mC_nF_{2n+1}$, $O_mC_nF_{2n}H$, $-\phi$, or $-O\phi$, m=0–1 and n independently=1–4, with the proviso that when the substituent is fluoro, or chloro, R is not OCH_3; or

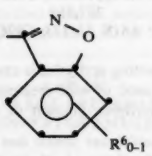
R^1=a 5-isoxazolyl of the formula



R^4=H,
Br,
Cl,
I,
C_1–C_3 alkyl, or
CN; and

R^5=CF_3, tert-butyl, phenyl, or a meta-or-para-substituted phenyl of which the substituent is fluoro, C_1–C_4 alkyl, C_1–C_4 alkoxy, $O_mC_nF_{2n+1}$, $O_mC_nF_{2n}H$, $-\phi$, or $-O\phi$, m=0–1 and n independently=1–4, with the proviso that when the substituent is fluoro, R cannot simultaneously represent more than one chlorine atom; or

R^1=a 3-benzisoxazolyl of the formula



R^6=halo,
C_1–C_4 alkyl,
C_1–C_4 alkoxy,
$O_mC_nF_{2n+1}$,
$O_mC_nF_{2n}H$,
$-\phi$, or
$-O\phi$,
m=0–1 and n independently=1–4.

34. Method of suppressing insects of an order selected from the group consisting of Coleoptera, Diptera, Lepidoptera, and Orthoptera, which comprises applying to the locus of the insects an effective amount of an active agent which is a compound of claim **1**.

4,336,265

METHOD OF INCREASING FEED EFFICIENCY IN SWINE

Jesse E. Shively, Terre Haute, Ind., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 6, 1980, Ser. No. 204,731
Int. Cl.³ A61K *31/35*
U.S. Cl. 424—283 **6 Claims**

1. A method of increasing the utilization of feed by swine comprising orally administering to a pig weighing at least about 35 kg an effective amount of a compound selected from salinomycin and 4-methylsalinomycin and the physiologically acceptable esters and salts thereof.

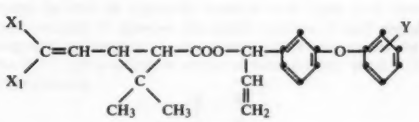
4,336,266

INSECTICIDAL 2,2-DIMETHYL-3-(2',2'-DIHALOVINYL)-CYCLOPROPANE CARBOXYLIC ACID 3-HALOPHENOXY-α-VINYLBENZYL ESTERS

Jozef Drabek, Oberwil; Peter Ackermann, Reinach; Saleem Farooq, Ettingen; Laurenz Gsell, Basel, and Odd Kristiansen, Möhlin, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 84,954, Oct. 15, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 240,334
Claims priority, application Switzerland, Nov. 26, 1978, 11077/78; Sep. 11, 1979, 8504/79
Int. Cl.³ C07C *69/743;* **A01N** *53/00*
U.S. Cl. 424—305 **8 Claims**

1. A compound of formula



wherein each of X_1 and Y is fluorine, chlorine or bromine.

7. An insecticidal and acaricidal composition which contains, as active component, an insecticidally or acaricidally effective amount of a compound according to claim **1**, together with a suitable carrier.

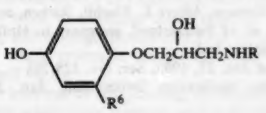
4,336,267

HEART ACTIVE COMPOUNDS AND METHODS OF USE

Enar I. Carlsson, Kungsbacka; Nils H. A. Persson, Dalby; Gustav B. R. Samuelsson, Molnlycke, and Kjell I. L. Wetterlin, Sandby, all of Sweden, assignors to Aktiebolaget Hässle, Goteborg, Sweden

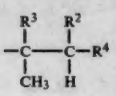
Division of Ser. No. 549,841, Feb. 13, 1975, Pat. No. 4,244,969. This application May 19, 1980, Ser. No. 150,883
Claims priority, application Sweden, Feb. 14, 1974, 7401958
Int. Cl.³ A61K *31/24;* **C07C** *101/72*
U.S. Cl. 424—309 **12 Claims**

1. A compound of formula I(a)

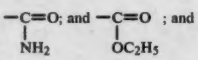


I(a)

wherein
R is

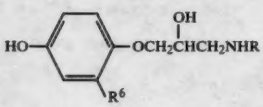


wherein
R^2 is hydrogen;
R^3 is selected from the group consisting of hydrogen and methyl;
R^4 is selected from the group consisting of



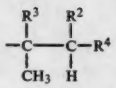
R^6 is selected from the group consisting of hydrogen, halogen and allyl; or
a pharmaceutically acceptable salt of a compound according to formula I(a).

4. A method of stimulating the β-receptors of the heart by administering to mammals, including man, suffering from symptoms and signs of cardiac failure, in an amount sufficient to mitigate said symptoms, a compound of the general formula I(a)

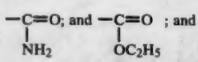


I(a)

wherein
R is



wherein
R^2 is hydrogen;
R^3 is selected from the group consisting of hydrogen and methyl;
R^4 is selected from the group consisting of



R^6 is selected from the group consisting of hydrogen, halogen and allyl;
or a pharmaceutically acceptable salt of a compound according to formula I(a).

4,336,268

CYCLOHEXENE DERIVATIVE ANALGESICS

Hans Bruderer, Benken; Albert E. Fischli, Riehen, and Rudolf Pfister, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

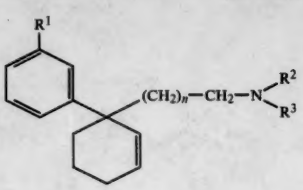
Filed Jan. 27, 1981, Ser. No. 228,793

Claims priority, application Switzerland, Jan. 29, 1980, 724/80

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **9 Claims**

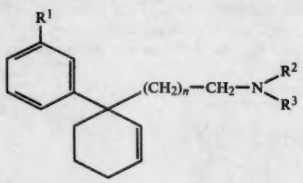
1. A compound of the formula



I

wherein R^1 is hydroxy or lower alkoxy, n is the integer 1 or 2, R^2 is lower alkyl and R^3 is hydrogen, lower alkyl, lower alkenyl or lower cycloalkylmethyl, or a pharmaceutically acceptable acid addition salt thereof.

7. An analgesic composition comprising an analgesically effective amount of a compound of the formula



I

wherein R^1 is hydroxy or lower alkoxy, n is the integer 1 or 2, R^2 is lower alkyl and R^3 is hydrogen, lower alkyl, lower alkenyl or lower cycloalkylmethyl, or a pharmaceutically acceptable acid addition salt thereof, and an inert carrier material.

4,336,269

PARA-NITROPHENYLALKYLAMINES

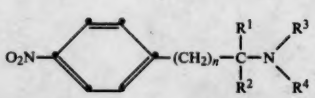
Bryan B. Molloy, North Salem, and Mitchell I. Steinberg, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 102,044, Dec. 10, 1979, Pat. No. 4,277,501, which is a continuation-in-part of Ser. No. 861,789, Dec. 19, 1977, abandoned. This application Feb. 24, 1981, Ser. No. 237,569

Int. Cl.³ A61K *31/135*; C07C *87/28*

U.S. Cl. 424—330 **9 Claims**

1. A method of treating arrhythmia comprising administering to a patient in need of said treatment a therapeutic or prophylactic antiarrhythmic amount of a compound of the formula



wherein:
n is 2–5;
R^1 is hydrogen or C_1–C_2 alkyl;
R^2 is hydrogen or C_1–C_3 alkyl;
R^3 is hydrogen or C_1–C_8 alkyl;
R^4 is C_1–C_{10} alkyl;
provided that when R^3 is hydrogen, R^4 is C_5–C_7 alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,336,270

O-BENZYLPHENOLS

Rene Muntwyler, Hofstetten, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

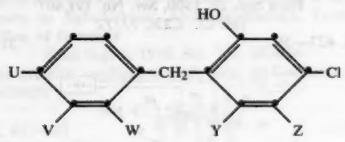
Continuation of Ser. No. 856,939, Dec. 2, 1977, abandoned, which is a continuation of Ser. No. 678,771, Apr. 20, 1976, abandoned, which is a continuation of Ser. No. 510,937, Oct. 1, 1974, abandoned. This application Oct. 5, 1979, Ser. No. 82,188

Claims priority, application Switzerland, Oct. 29, 1973, 15200/73

Int. Cl.[3] C07C *39/367;* A01N *31/08*

U.S. Cl. 424—347 17 Claims

1. An o-benzylphenol of the formula



wherein
Y represents hydrogen or chlorine
Z represents hydrogen, chlorine or bromine,
U represents hydrogen, chlorine or fluorine,
V represents hydrogen or chlorine and
W represents hydrogen or chlorine.

4,336,271

TENDERIZATION OF MEAT BY NATURAL ENZYME CONTROL

Chunghee K. Kang, Hinsdale; Ronald F. Jodlowski, Lemont; Thomas H. Donnelly, Western Springs, and William D. Warner, Elmhurst, all of Ill., assignors to Swift Independent Packing Company, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,372

Int. Cl.[3] A22C *21/00;* A23L *1/31*

U.S. Cl. 426—55 10 Claims

1. An improved method for tenderizing meat by control of naturally occurring enzymes, comprising:

injecting live animals and fowl with an aqueous solution of a unionized calcium salt and a zinc chelating compound in an amount sufficient to raise the concentration of free calcium ions in the muscle tissue to at least 1 mM and to effectively bind the free zinc ions in the meat,

slaughtering the animals and fowl after injection,

holding the meat within the optimum temperature of the natural enzyme for a period of time and thereafter processing the tenderized meat in accordance with commercial processing procedures.

4,336,272

PROCESS FOR THE PREPARATION OF AN OIL-IN-WATER EMULSION

Cornelis T. Verrips, and Renee van Rhee, both of Maassluis, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 17, 1980, Ser. No. 198,084

Claims priority, application Netherlands, Oct. 25, 1979, 7907831

Int. Cl.[3] A23D *5/00*

U.S. Cl. 426—250 14 Claims

1. A process for the preparation of an edible, microbiologically stable oil-in-water emulsion from components comprising an oil, water, a thickener and an emulsifier, at least one of said components being microbiologically contaminated, comprising:

(a) subjecting the microbiologically contaminated component to an osmotic shock and/or an acid shock;

(b) subjecting said component from step (a) to a temperature shock by raising the temperature at least 20° C. to a value between 40° and 55° C. within three minutes;

(c) processing the component from step (b) with the remaining ingredients into a final emulsion;

(d) filling the final emulsion into containers; and

(e) sealing the containers,

the temperature of the emulsion during the processing, filling and sealing steps being maintained within the temperature range of 40° to 55° C.

4,336,273

VEGETABLE AND FRUIT PRESERVATION PROCESS

Chi-Hang Lee, Walnut Creek, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Oct. 3, 1980, Ser. No. 193,778

Int. Cl.[3] A23B *7/14;* A23L *3/34*

U.S. Cl. 426—321 39 Claims

1. A process for treating fruit or vegetable material to minimize loss of texture which comprises contacting said material for a period of time sufficient to stabilize the texture of said material at a temperature of about 0° C. to 75° C. with at least 0.1 percent by weight based on the weight of said materials being treated of an organic compound selected from the group consisting of:

(a) alcohols,
(b) aldehydes,
(c) amides,
(d) esters,
(e) hydrocarbons,
(f) halogenated hydrocarbons,
(g) ketones,
(h) lactones and
(i) nitriles,

rinsing the fruit or vegetable material with water or a water-based medium to remove the major portion of said organic compound and heating the rinsed material at temperatures of at least 80° C. for a sufficient period of time to effect sterilization of the material.

4,336,274

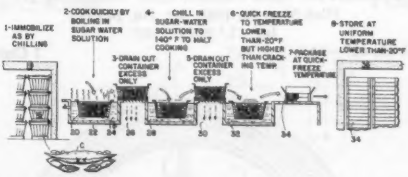
WHOLE BLUE CRAB FREEZING PROCESS

Kenneth B. Ross, Bel Air, and Carl R. Jones, Takoma Park, both of Md.

Continuation-in-part of Ser. No. 27,659, Apr. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 768,229, Feb. 14, 1977, abandoned. This application Jul. 30, 1980, Ser. No. 173,690

Int. Cl.[3] A23B *4/08;* A23L *1/33*

U.S. Cl. 426—643 9 Claims



1. In a process for preserving whole blue crabs for later preparation and service as whole steamed crabs, including the sequential steps of cooking, quick cooling, quick freezing, packaging and storing, the improvement comprising preserving fresh whole crabmeat texture and taste through an extended shelf life by:

(a) in at least one of said cooking and cooling steps, saturating the whole crab interiors with a solution consisting of water having sugar therein, sufficient for preserving the taste of the meat of the whole crabs, but substantially free of salt;

(b) quick freezing the cooked and cooled whole crabs; and then

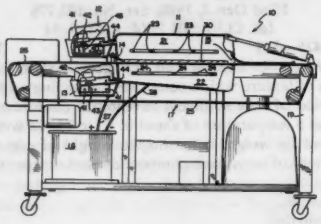
(c) storing the solution-maintained quick frozen whole crabs at a temperature lower than −15° F.

4,336,275

METHOD AND APPARATUS FOR LUBRICATING CONDUCTIVE SUBSTRATES

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Sep. 18, 1980, Ser. No. 188,335
Int. Cl.[3] B05D *1/04;* B05B *5/00*
U.S. Cl. 427—27 5 Claims



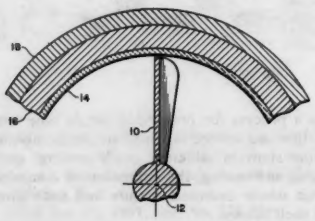
5. A method for providing an ungrounded metallic substrate with lubricating particles, comprising moving the ungrounded metallic substrate through a deposition zone defined by a pair of deposition chambers, one on each side of the substrate, providing separate supplies of lubricating particles to be deposited in the deposition zone, charging the lubricating particles for deposition, one separate supply of lubricating particles being provided to one of the deposition chambers on one side of the substrate with electrical charges of one polarity and the other separate supply of lubricating particles being provided to the other deposition chamber on the other side of the substrate with electrical charges of the opposite polarity, and providing a simultaneous flow of charged particles of both polarities to the ungrounded metallic substrate at about the same rate while in the deposition zone to avoid an accumulation of high voltage during deposition.

4,336,276

FULLY PLASMA-SPRAYED COMPLIANT BACKED CERAMIC TURBINE SEAL

Robert C. Bill, Rocky River, and Donald W. Wisander, Columbia Station, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1980, Ser. No. 145,209
Int. Cl.[3] B05D *1/08*
U.S. Cl. 427—34 7 Claims



1. A method of making a seal comprising the steps of providing a substrate of a dense metal,

simultaneously depositing a material that is easily decomposable at low temperatures and a high temperature oxidation-resistant metal onto said substrate to form a composite,

applying a metal bond coating onto said composite,

applying a ceramic layer onto said bond coating, and

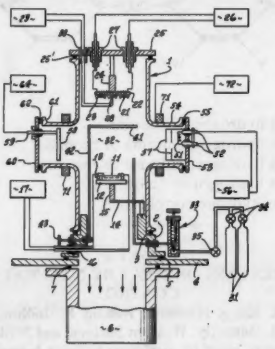
heating the resulting system to volatilize the decomposable material in said composite.

4,336,277

TRANSPARENT ELECTRICAL CONDUCTING FILMS BY ACTIVATED REACTIVE EVAPORATION

Rointan Bunshah, Los Angeles, Calif., and Prem Nath, Troy, Mich., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 29, 1980, Ser. No. 191,407
Int. Cl.[3] C23C *13/12*
U.S. Cl. 427—38 21 Claims



1. In a process for depositing a transparent electrical conducting film on a substrate by activated reactive evaporation, the steps of:

supporting the substrate in a vacuum;

evaporating a low melting point metal or alloy by resistive heating of the solid material producing a metal vapor in a zone between the resistance heat source and the substrate, with the substrate above the resistance heat source so that the metal vapor moves upward from the heat source toward the substrate;

introducing oxygen gas into the zone;

extracting low energy electrons from a heated cathode by a dc electric field directed across the path of the metal vapor in the zone between the resistance heat source and the substrate, which electric field is produced by applying an electrical potential between cathode and anode of about 20 to about 200 volts;

directing a beam of the low energy electrons laterally through the zone for colliding with the gas and metal atoms producing gas and metal ions and energetic neutral atoms which react with each other and with neutral metal and gas atoms in the zone resulting in a metal oxide deposit on the substrate; and

providing a magnetic field along the beam of electrons so that electrons travel in a helical path in the zone.

15. In an apparatus for producing transparent electrical conducting thin films by activated reactive evaporation, the combination of:

a vacuum chamber;

an electrical resistance heater mounted in said chamber;

means for connecting an electrical power supply to said heater;

a substrate holder mounted in said chamber spaced upward from said heater with a reaction zone therebetween and defining a first metal vapor path from said heater upward to said holder through said zone;

means for directing a gas into said zone;

a source of a beam of low energy electrons mounted in said chamber for directing an electron beam into said zone along a second electron path transverse to said first path; and

magnetic means for providing a magnetic field along said second path to cause said low energy electrons to travel in helical paths.

4,336,278

METHOD FOR COATING MAGNETIC, BINDER-CONTAINING DISPERSIONS ON FLEXIBLE SUBSTRATES

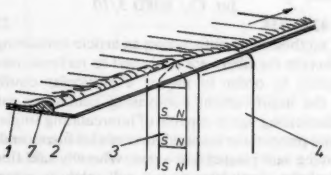
Albert Pertzsch, Munich; Siegfried Rieger, Groebenzell, and Friedrich Ankenbrand, Neuried, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,054

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936035

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—47 **3 Claims**



1. The method of forming a coat of dispersions in a binder on a plane surface of a substrate, the coating composition comprising magnetizable dispersions in a binder containing the dispersions,

the method steps including applying the composition of binder and magnetizable dispersions as a coat onto a plane surface of a flexible substrate and in a width narrower than that of the plane surface to provide a coat border spaced from the lateral edge of the substrate,

subjecting the magnetizable dispersion to a strong magnetic field emanating from a magnetic circuit comprised of a pair of saturated pole elements having edges positioned to provide a gap therebetween and to supply an induced flux of a magnetic field at the gap,

moving said coat and substrate together in a direction of travel past the pole elements with said plane surface moving in said direction of travel over the center line of the gap between the edges of the poles, and the substrate moving over the pole elements which are both positioned beneath the substrate with respect to the coat so that the center line of the gap forms an angle with the coat border of between 0.5 and 10°, and guiding the coat border through the induced flux of the magnetic field and moving the composition at the coat border toward the substrate lateral edge as the coat passes across the gap.

4,336,279

APPARATUS AND PROCESS FOR DRYING AND CURING COATED SUBSTRATES

Wesley A. Metzger, 3107 Knoll Dr., Falls Church, Va. 22402

Filed Jul. 4, 1978, Ser. No. 924,814

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—55 **12 Claims**

1. Apparatus for drying and curing coatings on substrates conveyed through said apparatus, comprising:

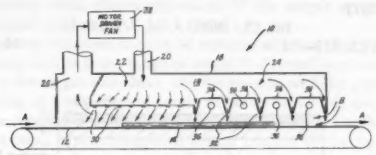
means for supplying high-velocity, hot air;

means fluidically connected to said air supply means for conducting said high-velocity, hot air onto said substrate so as to achieve flashing of volatile constituents from said substrate coating;

means fluidically connected to said air supply means and located downstream of said flashing means for conducting said high-velocity, hot air onto said substrate subsequent to said flashing operation so as to further dry and cure said substrate, and further including radiant heating means for further drying and curing said substrate in conjunction with said downstream fluidic means;

means, disposed upstream of said upstream fluidic means, for exhausting said air from the vicinity of said substrate and recirculating said air to said hot air supply means;

said downstream fluidic means comprising a plurality of air knives having their exhausts directed normal to the flow path of said conveyed substrate; and



said radiant heating means comprising heating elements and means defining reflector units about said radiant heating elements, said reflector means also defining said air knives.

10. A process for drying and curing coatings on substrates, comprising the steps of:

conveying the substrate along a defined path;

conducting high-velocity, hot air onto the full surface of the coating on said substrate so as to achieve flashing of volatile constituents from said substrate coating;

conducting high-velocity, hot air, along with radiant heat energy, onto said substrate at a position downstream from said flashing so as to achieve further drying and curing of said substrate; and

exhausting said hot air, at a position upstream of said flashing, so as to recirculate said hot air for said flashing and further drying and curing.

4,336,280

METHOD FOR CONTINUOUS PRODUCTION OF NIOBIUM-GERMANIUM LAYERS ON A SUBSTRATE

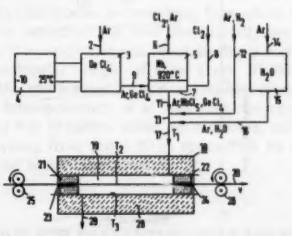
Alfred Müller, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 4, 1980, Ser. No. 203,968

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948735

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—62 **8 Claims**



1. A method for continuously producing layers of intermetallic superconducting A15 phase niobium-germanium Nb_3Ge by hydrogen reduction of gaseous halogenides of niobium and germanium, the method having the step of depositing the layers upon a heated substrate by conducting a gas mixture

having hydrogen and niobium and germanium halogenides to a reaction chamber through which the substrate is conducted, CHARACTERIZED IN THAT the heated substrate to be layered exceeds 100 meters in length and there is further provided the step of mixing water vapor with the gas mixture of hydrogen and niobium and germanium halogenides so as to produce an atmosphere in the reaction chamber having between 0.05 and 0.001 volume percent of water vapor.

4,336,281

METHOD OF MANUFACTURING A SOLAR CELL

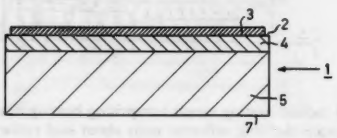
Jacobus H. C. van Mourik, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,693

Claims priority, application Netherlands, Jul. 27, 1979, 7905817

Int. Cl.³ B05D *3/04, 3/10, 3/12*

U.S. Cl. 427—74 **14 Claims**



1. A method of manufacturing a solar cell having a silicon disc with a region of n-conductivity type adjoining a major surface comprising the steps of forming an electrode containing silver on said n-type region in a silk-screening process by using a paste containing silver and an addition in elementary form belonging to the group of elements consisting of bismuth, magnesium and indium; carrying out a thermal treatent in an oxidizing atmosphere after forming said electrode; and thereafter subjecting said electrode to a mechanical treatment by a scouring treatment to improve junction resistance with said silicon.

4,336,282

PROCESS FOR PRODUCTION OF ELECTRODE FOR USE IN ELECTROLYSIS

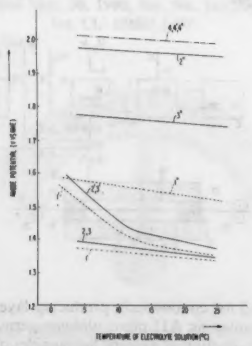
Hideo Sato, Chiba, and Takayuki Shimamune, Ichihara, both of Japan, assignors to Permelec Electrode Ltd., Tokyo, Japan

Division of Ser. No. 77,224, Sep. 20, 1979, Pat. No. 4,297,195. This application Feb. 5, 1981, Ser. No. 264,902

Claims priority, application Japan, Sep. 22, 1978, 53-115894

Int. Cl.³ C25B *11/08*

U.S. Cl. 427—125 **3 Claims**



1. A process for producing an electrode for use in the electrolysis of an aqueous solution of a metal halide, which comprises:

coating a solution containing a platinum compound and a tin compound, and optionally a cobalt compound, on an electrically conductive substrate,

and heat-treating the coated substrate in an oxidizing atmosphere thereby to form a coating on the substrate comprising:

(1) 50 to 95 mole % of platinum,

(2)(a) 5 to 50 mole % of tin oxide, or

(b) 5 to 50 mole % of tin oxide and cobalt oxide,

wherein the tin oxide is present in an amount of at least 5 mole % and the cobalt oxide is present in an amount up to 20 mole %, the total of (1) and (2) being 100 mole %.

4,336,283

PLASTICIZATION OF CARBON FIBERS

Leighton H. Peebles, Medfield; Donald R. Uhlmann, Newton, and Steven B. Warner, Brighton, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 471,942, May 21, 1974, abandoned. This application Aug. 16, 1976, Ser. No. 714,542

Int. Cl.³ B05D *3/10*

U.S. Cl. 427—154 **23 Claims**

1. In a method of manufacturing an article containing carbon fibers wherein the fibers are subjected to tortuous mechanical manipulation in order to impart a particular configuration thereto, the improvement comprising contacting said fibers with a plasticizing agent capable of intercalating single crystals of graphite prior to the manipulation of said fibers, and thereafter removing said plasticizing agent, whereby said fibers, after removal of the plasticizing agent, will retain to a measurable degree the configuration imparted thereto during the manipulation.

4,336,284

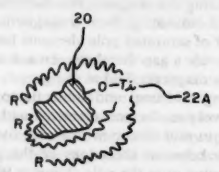
METHOD FOR PRETREATING COAL FLY ASH

Richard A. Wallace, 7304 SW. 53rd Ave., Portland, Oreg. 97219

Filed Dec. 15, 1980, Ser. No. 216,256

Int. Cl.³ B05D *7/00;* **B32B** *3/00;* **C08K** *9/02, 9/04, 9/06*

U.S. Cl. 427—213 **1 Claim**



1. A method for pretreating coal fly ash to obtain a partial monomolecular hydrophobic coating comprising the steps of:

(a) grinding predetermined quantities of non-uniform coal fly ash thereby obtaining predetermined quantities of coal fly ash powder;

(b) continuously moving said coal fly ash powder through a spray mixer using a fluidized bed type action so as to move and simultaneously agitate said powder;

(c) selecting a chemical agent from the long-chain organic group including stearic acid, organo-functional silanes and organotitanates;

(d) during said agitation of said powder, flowing in the range from 0.005% to 0.09% by weight, small amounts of said agent in any of mist, liquid and vapor form over said agitated powder thereby obtaining a partial monomolecular hydrophobic coating on the particles of said agitated powder which varies in particle coverage from one per-

cent to 99 percent coverage of the surfaces of said particles throughout said quantities of said agitated powder; and

(e) feeding said partially coated powder into a hopper for bagging operations.

4,336,285

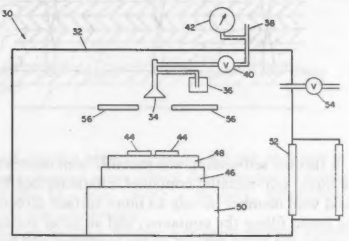
METHOD TO SYNTHESIZE AND PRODUCE THIN FILMS BY SPRAY PYROLYSIS

Michael R. Squillante, Waltham, Mass., assignor to Radiation Monitoring Devices, Inc., Watertown, Mass.

Filed Feb. 3, 1981, Ser. No. 231,128

Int. Cl.³ B05D *1/02, 3/02;* **C03C** *17/10, 17/22*

U.S. Cl. 427—314 **3 Claims**



1. In the process of making a thin film comprising preparing a solution with solute elements including a salt of a first constituent element of said film and spraying said solution onto a heated substrate to form a film on said substrate, the solute and solvent elements not constituting said film forming volatile reaction products after contacting said heated substrate, said solution also including an agent in sufficient amount to change the oxidation state of at least one said solute element after contacting said heated substrate,

the improvement wherein said agent is an organic acid with a solubility greater than 1 M in the solvent.

4,336,286

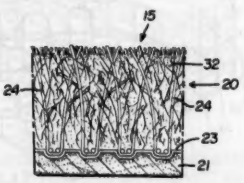
TENNIS COURT SURFACE WITH SAND TOPDRESSING

Seymour A. Tomarin, P.O. Box 730, 23 Smith St., St. Catherines, Ontario, Canada

Filed Nov. 26, 1980, Ser. No. 210,542

Int. Cl.³ A01N *3/00;* **A41G** *1/00*

U.S. Cl. 428—17 **2 Claims**



1. A stabilized sand surface for a tennis court formed of a synthetic pile carpet laid upon a flat, support surface, and covered with a granular material, comprising:

said pile carpet being formed of relatively thick, substantially equal length strands being of a synthetic fiber of between about one-half to two inches in length, with each of said strands being fastened at its lower end to a relatively resilient, generally flat carpet base sheet, and extending upright therefrom, and with the strands being densely packed together, with adjacent strands generally tending to partially intertwine together, to form a thick, dense, mat-like network, each of said strands being narrow, flat, strip-like, of substantially uniform cross-section, and having a width which is many times greater than the fiber thickness, and each of said strands having a plurality of side-by-side end portions to increase the intertwining with adjacent strands, said strands being formed of U-shaped, double bent, lengths of fibers which are clustered together into tufts, each comprising a substantial number of fibers per tuft, which are secured through the base sheet and wherein the lower surface of said base sheet includes a coating of a rubber-like material for providing a resilient base surface, and with the bights of the U-shaped, bent fibers being relatively thinly covered with the rubber-like base sheet coating to provide downwardly protruding treadlike formations on the lower surface of the carpet to thereby resist sliding movement of the carpet upon the support surface;

a uniform thickness coating of substantially dry, fine, silica sand, such as in the range of about 40–50 mesh size, covering the carpet base sheet, and the strands, with the coating being of a pre-selected height of between the free ends of the strands to a short distance beneath said free ends for exposing a pre-determined length portion of the tips of said free ends;

and said sand coating filling the interstices between the closely adjacent strands, whereby the mat-like network resiliently stabilizes the sand coating against permanently shifting under ball impact and wind blowing.

4,336,287

NON-HYDROGENATED THERMOPLASTIC ELASTOMER COATED FRAGMENT RETENTIVE RETURNABLE GLASS CONTAINERS AND PROCESS FOR THE PREPARATION THEREOF

Alex S. Forschirm, Parsippany, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,583

Int. Cl.³ B65D *11/16*

U.S. Cl. 428—35 **9 Claims**

7. A fragment retentive, returnable glass container comprising a glass container having coated thereon a coating consisting essentially of an unhydrogenated thermoplastic elastomer which has been baked in the presence of oxygen gas at a temperature from about 150° to about 170° C. for a time period of from about 10 to about 45 minutes, said unhydrogenated thermoplastic elastomer comprising:

(A) a block copolymer which is unhydrogenated and has at least two kinds of polymer blocks wherein one polymer block is designated by A and a second polymer block is designated by B such that:

(1) each A is a polymer end block of a monovinyl of alpha alkyl monovinyl arene having a number average molecular weight in the range of from about 5,000 to about 75,000, said blocks A comprising from about 5 to about 50% by weight of the total block copolymer, and

(2) each B is a polymer mid block having a number average molecular weight of from about 30,000 to about 300,000, and formed from a conjugated diene selected from homopolymers of at least one conjugated diene having 4 to 10 carbon atoms per molecule, said blocks B comprising from about 50 to about 95% by weight of the total block copolymer.

4,336,288

TECHNIQUE FOR PREVENTING SALT MIGRATION

Ernest J. Leddy, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

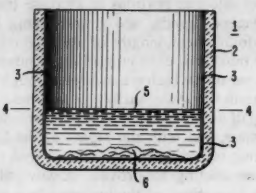
Filed Sep. 18, 1980, Ser. No. 188,499

Int. Cl.³ B05D *7/22, 5/08, 3/02;* **B32B** *1/02*

U.S. Cl. 428—35 **6 Claims**

1. A method for inhibiting migration of excess salt from an aqueous solution in a container comprising the steps of coating

the inside of said container with a room temperature vulcanizing silicone, allowing said silicone to cure so as to form a slippery surface within said container, and adding said solution



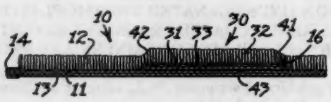
to the container such that the slippery surface of said cured silicone substantially inhibits said migration while the composition of said solution remains essentially uncontaminated in the presence of said silicone.

4,336,289

PRODUCT AND METHOD OF FORMING PATTERNED AREAS IN A PILE RUG

Edward L. Davis, 1087 Bailey Ave., Chattanooga, Tenn. 37404

Filed Jul. 6, 1981, Ser. No. 280,863
Int. Cl.[3] B32B 35/00; C09J 5/00
U.S. Cl. 428—67 11 Claims



1. A method of making patterned areas of different designs in a pile rug including a base fabric and pile yarns projecting from one side of the base fabric to form a pile surface, comprising the steps of:

(a) carving out from a predetermined area of the pile rug, portions of the pile yarn in said area, to form a trough-like surface of reduced pile height in said area,

(b) forming at least one fabric pattern piece having a top surface and a bottom surface, whose total shape and area is substantially equal to the predetermined area of said trough-like surface,

(c) applying an adhesive material to the bottom surface of said fabric pattern piece, and

(d) inserting said pattern piece upon said trough-like surface so that said pattern piece fits said corresponding trough-like area, said adhesive material bonds the bottom surface of said pattern piece to said trough-like area, and the top surface of said pattern piece is exposed to view in design contrast with the uncarved pile surfaces of the pile rug.

4,336,290

PALLADIUM ALLOYS FOR FUSION TO PORCELAIN

Min H. Tsai, Van Nuys, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Apr. 13, 1981, Ser. No. 254,005
Int. Cl.[3] A61K 6/04; C22C 5/04
U.S. Cl. 428—76 11 Claims

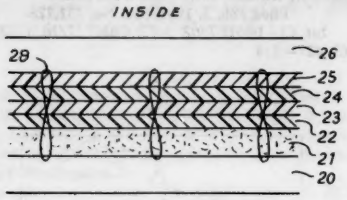
1. A semi-precious castable dental alloy suitable for bonding with dental porcelain comprising about 80–90% palladium, 5–15% indium, 1–5% gallium, 0.1–0.5% aluminum, 0.1–0.5% silicon and 0.01–1.0% of a member selected from the group consisting of ruthenium, osmium and mixtures thereof.

4,336,291

FLEXIBLE SELF-SEALING WALL MEMBER

Jeffrey C. Broadhurst; Richard A. Fletcher, both of Woodville Rubber Company, Hearthcote Rd., Swadlincote, Burton on Trent, Staffordshire, and Peter F. Jowitt, Royal Aircraft Establishment, Farnborough, Hampshire, all of England

Filed Dec. 14, 1978, Ser. No. 969,138
Claims priority, application United Kingdom, Dec. 15, 1977, 52347/77; Jul. 24, 1978, 30918/78
Int. Cl.[3] B32B 7/08, 7/14, 25/20
U.S. Cl. 428—101 15 Claims



1. A flexible self-sealing non-metallic wall member for forming a liquid non-metallic container, characterized by:

(a) said wall member having an inner surface directly contacting liquid filling the container, and an outer surface directly forming the outer surface of the container and being free of any contact with metallic sheet material, and

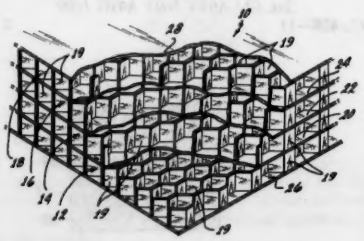
(b) said wall member comprising at least two solid non-porous sheets of elastomer in surface contact with one another, means joining said elastomer sheets together exclusively and only at a plurality of spaced positions, and a plurality of regions remaining between said spaced positions whereat said elastomer sheets are free to move laterally across each other.

4,336,292

MULTI-LAYER HONEYCOMB THERMO-BARRIER MATERIAL

Winford Blair, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jul. 11, 1980, Ser. No. 168,661
Int. Cl.[3] B32B 3/12
U.S. Cl. 428—116 12 Claims



1. Thermal barrier material for use on space type vehicles to insulate during launch and re-entry comprising:

at least four metal honeycomb cellular cores;

a first and second metal facing sheet having exposed surfaces; and

at least three metal septum sheets;

said metal honeycomb cellular cores are stacked in the direction of the cell openings with the septum sheets positioned between and physically bonded to their adjacent cellular cores and said facing sheets are positioned and physically attached on the cell surfaces of the outer cores to provide

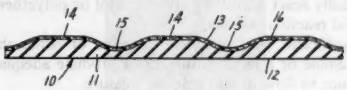
closures therefor whereby when the exposed surface of said first metal facing sheet is subjected to an operating temperature of 1000° F. to 2500° F., said thermal barrier material insulates said second metal facing sheet from said first metal facing sheet wherein the exposed surface temperature of said second metal facing sheet is a maximum of from 25% to 10% of the surface temperature of said first metal facing sheet.

4,336,293

ANTI-SLIP MAT

Ronald R. Eiden, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 27, 1981, Ser. No. 238,944
Int. Cl.³ B32B *3/28, 5/16*
U.S. Cl. 428—143 **3 Claims**



1. An anti-slip mat especially suited for use on floors in food service and industrial areas where the presence of grease, oil, water and the like may create a slippery, hazardous floor surface, said mat comprising:

(a) a shaped backing having a bottom surface adapted to permit the mat to lay flat on a flat surface and an opposite regularly undulated top surface characterized by having raised portions and depressed portions, said portions being shaped to permit liquids on said upper surface to substantially completely drain from said top surface when said mat is laid upon a flat surface, said backing being formed of an oil and water resistant polymeric composition having an inherent tensile strength greater than about 6.9 Pa, a modulus of at least 2.1 Pa at 100% elongation and a Shore A durometer of greater than 35 and having a thickness in said raised portions on the order of 3 to 13 mm and a difference of thickness between the raised and depressed portions of at least 1 mm;

(b) a polyurethane make adhesive resin adherently bonded to at least said raised portions of said backing;

(c) abrasive grains having a grit size on the order of 50–180 (0.3 to 0.1 mm average particle size) distributed over and adherently bonded by said make resin; and

(d) a polyurethane adhesive size resin covering said abrasive grain and said make adhesive resin, said make and size adhesive resins being included in the amount which provides firm adherent bonding of said abrasive grain to said top surface without obscuring the said grain whereby to provide an anti-slip surface and providing an abrasive layer which is adherently bonded to the upper surface of said backing to provide a 180° tensile strength between said abrasive layer and the backing of at least 5.8 kg per 25 mm width.

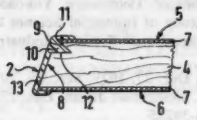
4,336,294

COATED BOARDS OF WOODEN MATERIAL IN PARTICULAR FOR USE IN FURNITURE

Max Meier, Stecket-Strasse 16, D-7585 Lichtenau-Scherzheim, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 119,419
Int. Cl.³ B32B *21/08*
U.S. Cl. 428—192 **6 Claims**

1. A board made of wooden material for use, for example, as a furniture board, such as a table top, said board comprising an upper side and a moisture-proof coating on said upper side, said board further comprising a cut edge surface covered with an edging of synthetic material sprayed under pressure onto said cut edge surface so as to form a strip overlapping an upper edge between said upper side and said cut edge surface, said cut edge surface being cut away directly adjacent to said upper side to form said upper edge, said cut edge surface extending into the interior of said board to form a back cut and further extending outwardly from the interior of said board, said synthetic material filling said cut edge surface, and wherein said synthetic material is a material adapted to shrink after application in said cut edge surface to increase the resistance of said edging to moisture penetration.

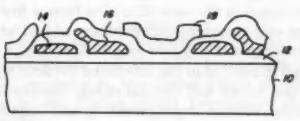


4,336,295

METHOD OF FABRICATING A TRANSPARENT METAL OXIDE ELECTRODE STRUCTURE ON A SOLID-STATE ELECTROOPTICAL DEVICE

Frank T. J. Smith, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,167
Int. Cl.³ C23F *1/02;* **H01L** *21/306*
U.S. Cl. 428—195 **10 Claims**



1. A method of fabricating an electrode structure of transparent metal oxide on a solid-state electrooptic device of the type having transparent gate electrodes through which light passes to expose the device, comprising the steps of:

depositing a layer of conductive transparent metal oxide on the device;

depositing a layer of pattern metal comprising a transition metal capable of forming a good electrical contact with the transparent metal oxide, and capable of being etched independently of the transparent metal oxide;

removing by etching, portions of the pattern metal to define a desired electrode pattern employing photolithographic techniques using an etchant that attacks the pattern metal, but does not substantially attack the metal oxide layer;

removing by etching, the portions of the metal oxide layer not covered by the pattern metal, using an etchant that attacks the transparent metal oxide but does not substantially attack the pattern metal;

further removing by etching, portions of the pattern metal from optically active areas of the device, but leaving pattern metal in the peripheral areas of the electrode structure where electrical contacts are to be made, using photolithographic techniques and an etchant that attacks the pattern metal but not the transparent metal oxide;

depositing a final layer of metal over the structure;

baking the structure at a temperature sufficient to promote adhesion of the final metal layer to the pattern metal; and

etching away portions of the final metal layer to define electrical conductive paths and bonding pads.

4,336,296

THREE-DIMENSIONALLY LATTICED FLEXIBLE-STRUCTURE COMPOSITE

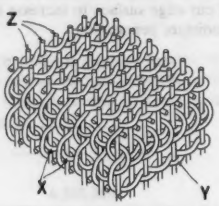
Kenji Fukuta, Yokohama; Ryuzo Onooka, Ayase; Eiji Aoki, Hachioji, and Shigeo Tsumuraya, Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,913

Claims priority, application Japan, Dec. 27, 1978, 53-162704; Mar. 31, 1979, 54-39225

Int. Cl.[3] D32B *7/00*

U.S. Cl. 428—257 4 Claims



1. A three-dimensional latticed flexible-structure composite comprising:

a plurality of substantially straight longitudinal strings, lateral strings, and vertical strings, each of said strings having a predetermined thickness;

a three-dimensional lattice which comprises said longitudinal strings and which further comprises said lateral and vertical strings wound and zigzagged about said longitudinal strings such that adjacent lateral and vertical strings orientated in the same direction form a first pitch greater than said predetermined thickness of said lateral and vertical strings and adjacent longitudinal strings form a second pitch greater than the combined predetermined thickness of said lateral and vertical strings therebetween; and

a matrix material impregnated on said longitudinal, lateral and vertical strings of said three-dimensional lattice such that said matrix material adheres to said longitudinal, lateral, and vertical strings so that said three-dimensional lattice composite has voids formed between the adjacent longitudinal, lateral and vertical strings coated with said matrix material.

4,336,297

ELECTRICAL LAMINATE

Yasuo Fushiki, Takatsuki; Masaharu Abe, and Masakazu Uekita, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1980, Ser. No. 143,086

Claims priority, application Japan, Apr. 27, 1979, 54/53239

Int. Cl.[3] B32B *7/00*

U.S. Cl. 428—284 24 Claims

1. In an electrical laminate suitable for use as a printed circuit wiring board comprising layers of a resin impregnated fibrous cellulosic substrate, said resin being a cured product of a mixture comprising an unsaturated polyester polymer and a cross-linking vinyl monomer therefor, the improvement which comprises said fibrous cellulose substrate being pre-impregnated with a solution consisting essentially of a nitrogen-containing composition having (a) a free or lower-alkylated methylol group attached to said nitrogen atom capable of etherifying with said cellulose substrate, and (b) an unsaturated group capable of copolymerizing with said cross-linking monomer.

4,336,298

ADHESIVE COMPOSITION AND COMPOSITE MADE THEREWITH

David S. Schwarz, Monroe Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 12, 1981, Ser. No. 273,133

Int. Cl.[3] B32B *15/00*

U.S. Cl. 428—285 8 Claims

8. A laminate comprised of two panels of fiberglass reinforced polyester adhered together with an adhesive comprising a reaction product of a reactive mixture of:

(a) 100 parts by weight of a polyester triol or polyether triol having a molecular weight of about 400 to 1000,

(b) an aromatic diisocyanate having a functionality of from about 2.3 to 2.7 and an equivalent weight of from about 85 to 150, said aromatic diisocyanate being present in an amount in excess of the amount necessary to stoichiometrically react with the polyester triol or polyether triol in said reaction mixture,

(c) sufficient para-phenylene diamine or ortho-phenylene diamine or a mixture thereof to produce adequate resistance to flow in said reactive mixture,

(d) sufficient tin compound catalyst to cause said reactive mixture to set within 15 minutes of the ambient temperature, and

(e) sufficient additional polyol free of nitrogen groups to provide functional hydroxyl groups essentially equivalent to the isocyanate groups in excess of the necessary isocyanate groups to stoichiometrically react with said polyester triol or polyether triol.

4,336,299

USE OF MODIFIED CELLULOSE HYDRATE FIBERS IN THE MANUFACTURE OF BONDED NON-WOVEN FABRICS AND PRODUCTS PREPARED IN THIS MANNER

Arno Holst, Wiesbaden; Reinhart Mayer, Kelheim, and Wilhelm Fischer, Pirmasens, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,148

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827804

Int. Cl.[3] D04H *1/58, 1/48, 5/04*

U.S. Cl. 428—288 6 Claims

1. A bonded non-woven fabric bonded by a chemical binder and capable of absorbing water vapor, containing fibers of modified cellulose hydrate either solely or blended with synthetic, natural or regenerated fibers, said modified cellulose hydrate being prepared prior to shaping into fibers by adding to viscose a modifying agent selected from the group consisting of a polysaccharide, a polysaccharide derivative, an acrylic polymer and a methacrylic polymer.

4,336,300

PROCESS FOR THE PRODUCTION OF WATER VAPOR-PERMEABLE SHEET MATERIALS

Ivan Lorant; Imre Csernyanszky; Gyula Murlasits, all of Budapest; Rezsö Rusznyak, , assignors to Bör-, Mübör-es Cipöipari Kutato Intezet, Budapest and Graboplast Györi Pamutszövöes Mübörgyar, Györ, both of, Hungary

Filed Apr. 30, 1980, Ser. No. 144,980

Int. Cl.[3] B05D *3/02, 5/00;* B32B *5/18, 27/00*

U.S. Cl. 428—316.6 11 Claims

1. A process for the production of sheet materials which are water permeable, highly resistant to wear, water resistant and mechanically stressable comprising mechanically foaming a dispersion of polymers selected from the group consisting of PVC and vinyl chloride-vinyl acetate copolymers dispersed in a softener, in the presence of a surfactant, adjusting the density of the foam by the mechanical foaming to 0.55–0.85 g/cm^3, gelling the foamed dispersion at a temperature of 120° to 220°

C. for at most 10 minutes, and finishing the sheet material by spraying and rastering.

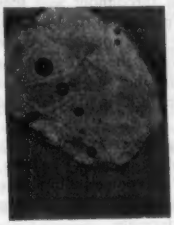
10. A water vapor permeable sheet prepared by the process of claim 1.

4,336,301

FILLER MATERIAL

Robert B. Shaw, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 20, 1980, Ser. No. 198,509
Int. Cl.³ B32B 5/16, 19/00
U.S. Cl. 428—323 15 Claims



1. A filler material for thermoplastic polymers comprising a mica-like, mineral sheet silicate having attached on a minor portion of the surfaces of said sheet silicate microscopic-size protrusions of a solid additive, wherein said additive has:

(a) a melting point below the decomposition point of said sheet silicate,

(b) a contact angle such that said additive wets the surface of said sheet silicate, and

(c) said additive upon cooling from a melt forms a solid material.

4,336,302

INSULATING TAPE FOR FABRICATING AN INSULATING SLEEVE FOR ELECTRIC CONDUCTORS IMPREGNATED WITH A THERMO-SETTING EPOXY RESIN/ACID ANHYDRIDE MIXTURE

Walter Ihlein, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 227,384
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003477
Int. Cl.³ B32B 5/16, 27/38
U.S. Cl. 428—324 10 Claims

1. An insulating tape for manufacturing an insulating sleeve for electric conductors and intended to be impregnated with a thermo-setting epoxy resin/acid anhydride hardener mixture, said tape comprising at least one layer of inorganic, breakdown-proof planar material, selected from the group consisting of mica flakes and thin mica films, applied to a flexible substrate, said layer or layers being cemented to the substrate and to each other with an epoxy resin binder containing as an accelerator for promoting the hardening reaction of the resin used for impregnation, a quaternary onium salt, said mixture of binder and accelerator forming a system which is self-hardening at the setting temperature of the thermo-setting impregnating resin, said epoxy resin binder and said accelerator being present, respectively, in amounts from about 3 to about 10% and from about 0.05 to about 3%, percents by weight of the total weight of the insulating tape.

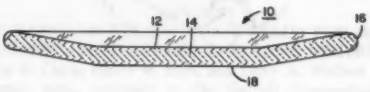
5. The insulating tape according to claim 1 wherein said mixture of binder and accelerator further contains an admixture acting as a hardener which becomes effective only at the setting temperature of the thermo-setting epoxy resin/acid anhydride hardener mixture, the amount of said admixture being from about 0.05 to about 10% by weight, referred to the weight of the binder.

4,336,303

INTEGRAL VITREOUS ARTICLE COMPOSED OF OPAQUE AND TRANSPARENT PORTIONS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,414
Int. Cl.³ B32B 9/00, 17/00
U.S. Cl. 428—334 14 Claims



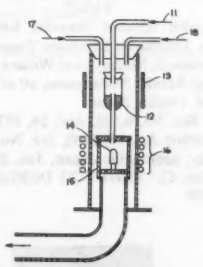
1. An integral vitreous article composed of an opaque portion encased within a thin, continuous, unbroken surface layer of transparent colored glass, the vitreous article having a uniform elemental composition throughout its mass consisting essentially of at least one alkali metal oxide and/or alkaline earth metal oxide, Al_2O_3, SiO_2, TiO_2, and, as a titania color coupler, A TiO_2-coupling agent selected from the group of a noble metal, a metal oxide other than an element from Groups I and II of the Periodic Table, and mixtures thereof, the opaque portion containing light scattering particles of a titaniferous nature.

4,336,304

CHEMICAL VAPOR DEPOSITION OF SIALON

Richard L. Landingham, and Alton W. Casey, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1979, Ser. No. 40,810
Int. Cl.³ B32B 9/04, 9/00; B05D 5/12
U.S. Cl. 428—336 11 Claims



1. A composite comprising a refractory material coated with a layer of sialon formed by chemical vapor deposition in a flowing atmosphere of air.

6. A method for coating a surface of a material with a sialon composition in a flowing atmosphere of air to provide a hard, dense, refractory surface, the method comprising:

a. exposing a surface of a refractory material to an ammonia-containing atmosphere;

b. heating the surface to at least about 1200° C.;

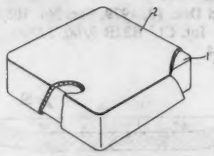
c. impinging a gas comprising N_2, $SiCl_4$, and $AlCl_3$ on the surface.

4,336,305

CERAMIC THROW-AWAY TIPS AND PROCESS FOR PRODUCING THE SAME

Hiroshi Tanaka, Aichi, Japan, assignor to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Dec. 13, 1979, Ser. No. 103,134
Claims priority, application Japan, Dec. 19, 1978, 53-155804
Int. Cl.³ C23C *11/08*
U.S. Cl. 428—336 **6 Claims**



1. A ceramic throw-away tip which comprises a hot-pressed sinter of Si_3N_4 on the surface of which is a thin coating of at least one of Al_2O_3 and AlON.

4,336,306

ELECTROSTATIC IMAGING SHEET

Adrian N. Fellows, 48 Bury New Rd., Ramsbottom, Bury, Lancashire, England

Filed Nov. 13, 1979, Ser. No. 93,432
Claims priority, application United Kingdom, Nov. 13, 1978, 44242/78; Nov. 17, 1978, 45049/78; Aug. 22, 1979, 7929205
Int. Cl.³ G01D *15/06, 15/34;* B32B *7/00;* G03G *7/00*
U.S. Cl. 428—341 **12 Claims**

1. An electrostatic imaging sheet which is comprised of a substrate treated to be suitably electrically conductive and a dielectric layer thereon which is the resultant of deposition from an aqueous dispersion comprising a mixture of a smectite clay and a dielectric polymer which is adapted to retain a latent electrostatic image, said clay forming at the interface between the conductive substrate and the dielectric layer a barrier layer which prevents migration and is substantially non-ionic.

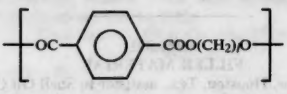
4,336,307

HOLLOW WATER ABSORBING POLYESTER FILAMENTS AND A PROCESS FOR PRODUCING THE SAME

Masahiro Shiozaki; Kiyoshi Nawata, both of Matsuyama; Osamu Wada, Takatsuki; Kiyokazu Tsunawaki, Matsuyama; Takatoshi Kuratsuji, Matsuyama; Wataru Funakoshi, Matsuyama, and Togi Suzuki, Matsuyama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 6,128, Apr. 24, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,529
Claims priority, application Japan, Jan. 27, 1978, 53-7156
Int. Cl.³ B29H *7/20;* D02G *3/00*
U.S. Cl. 428—398 **25 Claims**

1. Hollow water-absorbing polyester filaments, which consist essentially of a polyester having at least 90 molar percent of recurring units of the formula (I):



(I)

wherein l represents an integer of 2 to 6, and wherein each of said individual filaments has at least one hollow extending along the longitudinal axis of said filament and a number of pores, having a diameter of from about 0.01 to 1.0 micron, evenly distributed throughout said filament and extending approximately in parallel to the longitudinal axis of said filament, said hollow being connected to the outside of said filament at least through the portions of said pores which are connected to each other and wherein said filaments have a water absorption of at least 50 percent wherein said filaments are produced by;

(a) melt-spinning precursor hollow polyester filaments from a blend of polyester and 0.1 to 30% by weight based on the weight of said polyester of a pore forming agent consisting essentially of at least one organic sulfonate compound of the formula:

$$R'SO_3M' \text{ tm (III)}$$

wherein R′ is a member selected from the group consisting of alkyl radicals having 3 to 30 carbon atoms, aryl radicals having 7 to 40 carbon atoms and alkaryl radicals having 7 to 40 carbon atoms; and M′ is a member selected from the group consisting of alkali metals and alkaline earth metals, whereby said pore-forming agent is dispersed in the form of particles separate from each other and extending approximately in parallel to the longitudinal axis of said filament, in a matrix consisting of said polyester; and

(b) treating said melt-spun precursor hollow filaments with an alkaline aqueous solution to cause at least a portion of said particles of pore-forming agent and portions of said polyester matrix surrounding said particles of pore-forming agent to be removed from said precursor hollow filament and to form said pores in said hollow filament.

4,336,308

MAGNETIC RECORDING MEDIA

Yasuyuki Yamada; Kenichi Masuyama, and Nobuo Tsuji, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1979, Ser. No. 74,467
Claims priority, application Japan, Sep. 11, 1978, 53/111580
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—425.9 **24 Claims**

1. In a magnetic recording medium comprising a nonmagnetic support and a recording layer comprising a finely divided ferromagnetic powder dispersed in a binder, the improvement wherein said binder comprises a 2-chloroacrylonitrile polymer and a thermoplastic polyurethane.

4,336,309

CURABLE COATING AGENTS AND PROCESS FOR THE PRODUCTION OF SCRATCH-RESISTANT COATINGS ON PLASTICS

Klaus-Peter Jäckel, Limburgerhof; Günter Heil, Ludwigshafen, and Herbert Spoor, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,539

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946474

Int. Cl.³ B32B *9/04;* C08G *77/18, 77/20;* B05D *3/06*

U.S. Cl. 428—447 5 Claims

1. A curable coating agent based on an olefinically unsaturated polysiloxane, wherein the olefinically unsaturated polysiloxane is a polycondensate of

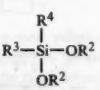
(a) from 1 to 40% by weight of a reaction product containing two or more carbon-carbon double bonds and one or more hydroxyl and/or alkoxy groups per molecule, obtained from an olefinically unsaturated silane containing 2 or more hydroxyl or C_1–C_4-alkoxy groups, whose olefinically unsaturated organic radical is bonded via a C—Si bond, and a hydroxyl-containing α,β-olefinically unsaturated monomer,

(b) from 20 to 80% by weight of an olefinically unsaturated silane of the general formula

$$R^1—Si(OR^2)_3$$

where R^1 is a vinyl or C_2–C_8-alkyl acrylate or methacrylate radical bonded to the Si atom via a C—Si bond and R^2 is hydrogen or a saturated hydrocarbon radical of 1 to 4 carbon atoms,

(c) from 5 to 55% by weight of a saturated silane of the general formula



where R^2 has the above meanings and R^3 and R^4 are identical or different and each is a saturated hydrocarbon radical of 1 to 6 carbon atoms or an unsubstituted or C_1–C_4-alkyl-substituted aromatic hydrocarbon radical, and

(d) from 0 to 30% by weight of an epoxide-containing silane containing 2 or more hydroxyl or C_1–C_4-alkoxy groups.

3. A process for producing a scratch-resistant coating on the surface of a plastic, wherein a curable coating agent as claimed in claim 1 is applied in a conventional manner to the surface of a plastic and is cured by ionizing radiation, by exposure to heat in the presence of a free radical initiator or initiator system, or by irradiation with ultraviolet light in the presence of conventional photoinitiators.

4,336,310

MAGNETIC RECORDING MEDIUM AND PREPARATION THEREOF

Kiyotaka Okuyama; Akihiko Hosaka, and Yukihiro Isobe, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,265

Claims priority, application Japan, Jan. 28, 1980, 55-7813

Int. Cl.³ B32B *9/04;* H01F *10/02*

U.S. Cl. 428—447 3 Claims

1. A magnetic recording medium which comprises a substrate coated with a magnetic layer comprising a binder resin and a metallic magnetic powder supporting silica on its surface which is coated with sequential layers of hydrolyzed silane compound and oleic acid, wherein said hydrolyzed silane compound is bonded to said silica.

4,336,311

HUMIDITY- AND SALT-RESISTANT ELECTRONIC COMPONENT

Michael F. Lucey, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 25, 1980, Ser. No. 180,749

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—521 12 Claims

1. An electronic component coated with an ultraviolet light cured coating comprising a urethane, a triacrylate-tetraacrylate blend, a photoinitiator, and a wet adhesion monomer chosen from the group of allylic and acrylic ureides, said coating providing resistance to humidity and to salt water.

4,336,312

WELDABLE NICKEL BASE CAST ALLOY FOR HIGH TEMPERATURE APPLICATIONS AND METHOD

Jeffrey J. Clark; Harry R. Fisk, and Larry A. Wallace, all of Tempe, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 30, 1980, Ser. No. 116,691

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—680 11 Claims

1. A welded article of cast Nickel base super alloy for use at elevated temperatures up to about 1800 degrees F., characterized by resistance to weld cracking, room temperature ultimate strength of at least 100,000 psi, 0.2% offset yield strength of at least 95,000 psi with at least 3% elongation, and a minimum stress rupture time of 23 hours at a constant stress of 65,000 psi at 1500 degrees F., consisting essentially of an alloy of about 12 to 14% Chromium, about 3.8 to 5.2% Molybdenum, 4.5 to 5.5% Aluminum, 0.16 to (0.25%) 0.26% Carbon, 0.5 to 1.0% Titanium, 1.8 to 2.8% Columbium plus Tantalum, 0.05 to 0.10% Zirconium, and the balance substantially all Nickel.

4,336,313

LUMINESCENT MATERIAL, METHOD OF MAKING, AND SCREENS EMPLOYING SAME

Thomas E. Peters, Chelmsford, and James R. McColl, Concord, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 3, 1981, Ser. No. 251,028

Int. Cl.³ C09K *11/44, 11/24;* H01J *29/20*

U.S. Cl. 428—691 8 Claims

1. A green-emitting phosphor having a composition corresponding to the general formula:

$$[(1-w-x)(Zn_2SiO_4).w(Li_2ZnF_4)].xMn_2SiO_4.yAs_2O_z$$

wherein

$0.02 \leqq w \leqq 0.20$

$0.0005 \leqq x \leqq 0.06$

$0 \leqq y \leqq 0.001$

$3 \leqq z \leqq 5.$

4,336,314

PASTED TYPE LEAD-ACID BATTERY

Kunio Yonezu; Masaharu Tsubota, and Katsuhiro Takahashi, all of Kyoto, Japan, assignors to Japan Storage Battery Company, Ltd., Kyoto, Japan

Filed Apr. 2, 1980, Ser. No. 136,643

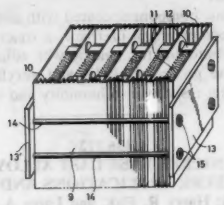
Claims priority, application Japan, Oct. 24, 1979, 54-138223

Int. Cl.³ H01M *2/16, 2/02*

U.S. Cl. 429—66 12 Claims

1. A pasted type lead-acid battery comprising: a plurality of positive and negative plates which comprises grids of lead-

based material pasted with an active material; separators for separating said plates; a plurality of glass mats in contact with surfaces of said positive plates; said glass mats having a dual layer structure comprising a first layer of glass fibers in contact with said surfaces of said positive plates and having a diameter of no more than 1 μm and a second layer of glass fibers having



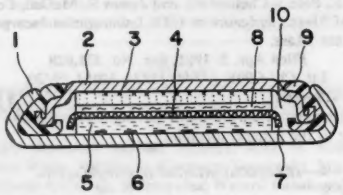
a diameter of at least 10 μm; a battery container in which are disposed assembled elements comprising said plates, said separators and said glass mats, pressure being applied to said assembled elements within said container, said pressure being within a range of 20 to 80 kg/dm^2 without electrolyte in said container.

4,336,315

ORGANIC ELECTROLYTE CELL WITH MANGANESE DIOXIDE CATHODE AND A LIGHT METAL ANODE

Nobuo Eda; Takashi Iijima, both of Hirakata, and Yoshinori Toyoguchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jan. 21, 1981, Ser. No. 227,785
Claims priority, application Japan, Jan. 21, 1980, 55-6208
Int. Cl.^{3} H01M *6/16*
U.S. Cl. 429—194 **6 Claims**



1. A cell composed of an anode with a light metal as an active material, an organic electrolyte comprising ester, and a cathode with manganese dioxide as an active material, said cathode containing an alkaline earth metal oxide.

4,336,316

IMAGE FORMING METHOD

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 620,458, Oct. 7, 1975, abandoned. This application Oct. 20, 1978, Ser. No. 953,301
Claims priority, application Japan, Oct. 7, 1974, 49-115388
Int. Cl.^{3} G03C *5/04, 5/00, 5/30*
U.S. Cl. 430—5 **30 Claims**

8. A method for producing an image comprising:

(a) forming a silver image on a photographic material which comprises a transparent substrate having thereon a masking layer of a metal, a metal oxide, a semi-metal, a chalcogen glass, or a mixture thereof, said masking layer having thereon at least one silver halide emulsion layer, either directly or on at least one subbing layer on said masking layer, by exposing, developing and fixing said photograhic material;

(b) heating said photographic material at above 350° C. in an oxygen containing gas until the binder at said silver image areas is substantially removed;

(c) dissolving away the image-forming silver to uncover said masking layer lying thereunder; and

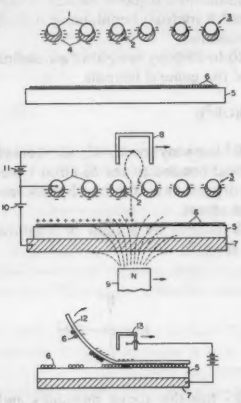
(d) then etching away said masking layer at the uncovered areas to leave said masking layer at the non-silver image areas.

4,336,317

METHOD FOR FORMING IMAGES USING A PHOTOSENSITIVE SCREEN

Yujiro Ando, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,245
Claims priority, application Japan, Sep. 26, 1979, 54-123635
Int. Cl.^{3} G03G *13/22, 13/24*
U.S. Cl. 430—53 **7 Claims**



1. A method for forming an image, wherein an ion stream is applied to a control means which emits a controlled stream of ions to form an imagewise charge pattern in a layer of developer particles, which method comprises the steps of coating a uniform layer of magnetic electrically-insulating developer particles onto one surface of a developer supporting member, applying the controlled stream of ions to said uniform layer of developer particles to form the charge pattern in said layer while generating a magnetic field at an opposed surface of said developer particle supporting member when said layer is at the position for forming the charge pattern, and placing a transfer member onto said developer layer having the charge pattern to transfer the developer particles onto said transfer member in accordance with the charge pattern.

4,336,318

ELECTROSTATIC IMAGE DEVELOPING METHOD

Hiroshi Fukumoto, Kawasaki, and Yoshio Takasu, Tama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,773
Claims priority, application Japan, Jan. 11, 1980, 55-1963
Int. Cl.^{3} G03G *13/08*
U.S. Cl. 430—120 **4 Claims**

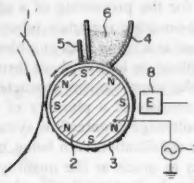
1. A method for developing electrostatic images comprising facing an electrostatic image bearing member bearing electrostatic images on the surface to a support member having a toner particle layer on the surface, characterized in that when the triboelectric charge of the toner is q(c/g), thickness of the

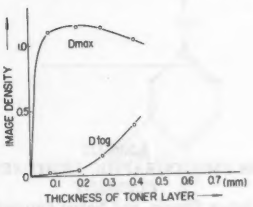
toner particle layer, d(mm), is adjusted to satisfy the following formula:

$$3\times10^{-8}<|q.d|<5=10^{-6}$$

4. The developing method according to claim 1, wherein said developing method comprises the steps of:

defining a developing zone wherein a latent image bearing member and a non-magnetic conductive member carrying a layer of magnetic toner particles on the surface thereof





are disposed in opposed relationship with a clearance between the surface of the latent image bearing member and the surface of the non-magnetic conductive member, the clearance being greater than the thickness of said toner layer so as to create an air gap;

providing a magnetic field in said developing zone;

moving said latent image bearing member and said non-magnetic conductive member in the same direction; and

imparting an alernating electric field sufficient to produce electric fields across said developing clearance.

4,336,319

LIGHT-SOLUBILIZABLE COMPOSITION

Akira Nagashima, and Nobuyuki Kita, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 22, 1980, Ser. No. 199,123

Claims priority, application Japan, Oct. 23, 1979, 54-136728

Int. Cl.³ G03C *1/60;* G03F *7/08;* G03C *1/94*

U.S. Cl. 430—165 **9 Claims**

1. A light-solubilizable composition comprising at least one o-quinonediazide compound and at least one alkali-soluble resin compatible therewith as essential components and containing fine particles dispersed therein which:

(1) have an average particle size of 500 mμ or less;

(2) are insoluble in an organic solvent used to coat the light-solubilizable composition and have a hydrophobic surface;

(3) are transparent or white; and

(4) have a refractive index of 1.3 to 1.7, in an amount of 0.1 to 50% by weight based on said light-solubilizable composition, wherein said fine particles are aerosols of silicon dioxide where hydrophilic silanol groups on the surface thereof have been processed to render the same hydrophobic.

4,336,320

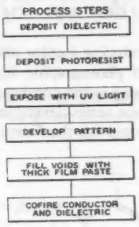
PROCESS FOR DIELECTRIC STENCILED MICROCIRCUITS

John P. Cummings, Bloomington; Janice D. Makos, Apple Valley, and David E. Pitkanen, St. Louis Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1981, Ser. No. 243,176

Int. Cl.³ G03C *7/00*

U.S. Cl. 430—198 **14 Claims**



1. A process for fabricating dielectric stenciled microcircuits comprising the steps of:

coating an insulating dielectric paste and photopatterning means over the surface of a substrate;

selectively exposing through a photolithography mask the substrate coating to light;

removing the exposed dielectric paste in the areas where the conductive circuit lines are to be located, thereby forming a dielectric stencil with voids;

filling the dielectric stencil voids with thick-film conductive paste to form the conductive lines; and,

cofiring the dielectric paste and the conductive paste.

4,336,321

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Eiji Kanada; Yasuo Tsubai; Shoji Yamada; Yoshikazu Takaya, and Takao Senga, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,445

Claims priority, application Japan, Feb. 7, 1980, 55-13904

Int. Cl.³ G03C *1/48, 1/34*

U.S. Cl. 430—234 **17 Claims**

1. A silver halide photographic material which comprises a support having thereon at least one photographic constituting layer including silver halide emulsion layer, wherein at least one of the constituting layer contains at least one compound represented by the general formulas (A): HS-R-Y or X-R-Y wherein R represents an alkylene or arylene group which may be substituted, Y represents a carboxyl or hydroxyl group and X represents a group capable of being released to produce HS-group and the silver halide emulsion layer contains at least one anion or betaine type cyanide sensitizing dye having one or two acidic groups selected from the group consisting of sulfoalkyl and carboxyalkyl.

2. A silver halide photographic material which comprises a support having thereon photographic constituting layers including silver halide emulsion layer and image receiving layer containing physical development nuclei, wherein at least one of the constituting layers contains at least one compound represented by the general formulas (A): HS-R-Y or X-R-Y wherein R represents an alkylene or arylene group which may be substituted, Y represents a carboxyl or hydroxyl group and X represents a group capable of being released to produce HS-group and the silver halide emulsion layer contains at least one anion or betaine type cyanine sensitizing dye having one or two acidic groups selected from the group consisting of sulfoalkyl and carboxyalkyl.

4,336,322

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shinsaku Fujita; Koichi Koyama; Yoshio Inagaki, and Kokichi Waki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

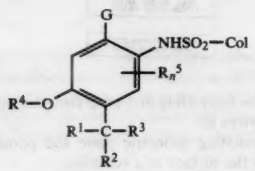
Filed Jul. 18, 1980, Ser. No. 170,261

Claims priority, application Japan, Jul. 18, 1979, 54-91187; Nov. 13, 1979, 54-146654; Nov. 13, 1979, 54-146655; Nov. 14, 1979, 54-148237; Nov. 19, 1979, 54-149777

Int. Cl.[3] G03C *1/40, 5/54, 1/10*

U.S. Cl. 430—242 23 Claims

22. A method of producing a color image which comprises processing an exposed photographic light-sensitive material containing a dye-releasing redox compound in the presence of a 1-aryl-3-pyrazolidinone series developing wherein said dye-releasing redox compound has the formula



(I)

wherein G represents a hydroxy group or a group providing a hydroxy group by hydrolysis;

Col represents a dye or dye precursor;

R^1 and R^2, which may be the same or different, each represents an alkyl group or an aromatic group, and R^1 and R^2 together can form a ring;

R^3 represents hydrogen, an alkyl group or an aromatic group;

R^4 can represent an alkyl group or an aromatic group;

R^5 can represent an alkyl group, an alkoxy group, an alkylthio group, an arylthio group, a halogen atom or an acylamino group;

n is 0, 1 or 2, and when n is 2, the two R^5s can be different from each other; and

R^4 and an R^5 together can form a heterocyclic ring, R^1 and R^4 together can form a heterocyclc ring, R^1 and R^5 together can form a ring, R^1, R^2 and R^3 together can form an adamantyl ring, and the total number of carbon atoms of R^1, R^2, R_3, R^4 and R_n^5 is more than 7.

23. A method of producing a color image as in claim 22 wherein the method is a color diffusion transfer process.

4,336,323

DECOLORIZABLE IMAGING SYSTEM

John M. Winslow, South Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 101,144, Dec. 7, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,426

Int. Cl.[3] G03C *1/52, 1/84*

U.S. Cl. 430—339 12 Claims

1. A light insensitive imageable layer comprising a synthetic polymeric binder, and within said binder (1) a dye, (2) a nitrate salt, and (3) an acid, said dye being present in said binder in sufficient concentration to provide an optical density of at least 0.1 in the visible region of the electromagnetic spectrum or to absorb at least 20% of incident radiation in a 50 nm range within the infrared or ultraviolet wavelengths of the electromagnetic spectrum, and said nitrate ion being present in a ratio of at least 0.1 moles/mole of dye, said nitrate salt in said binder being capable of liberating a sufficient quantity of an oxidizing agent selected from the class consisting of HNO_3, NO, NO_2, and N_2O_4 when heated to 200° C. for 60 seconds to oxidize said dye to a different color or colorless state.

4,336,324

METHOD FOR THE PROCESSING OF SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Shigeharu Koboshi, and Masayuki Kurematsu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1981, Ser. No. 273,253

Claims priority, application Japan, Jun. 18, 1980, 55-83068

Int. Cl.[3] G03C *7/00*

U.S. Cl. 430—372 4 Claims

1. In a method for the processing of a silver halide color photographic light-sensitive materials wherein said material, after being processed in a fixing bath or a bleach-fixing bath, is processed in a stabilization bath without through a substantial washing process, the improvement characterized in that the stabilization bath consists of a plurality of baths which are replenished by a multistage counterflow system, the replenishing quantity to the stabilization bath being in the range from three to fifty times as much as the quantity of a processing solution brought into the first stabilization bath from a preceding bath by a unit area of the light sensitive materials, and at least the final bath of said stabilization bath having a pH value of from 2.0 to 6.5.

4,336,325

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Kozo Aoki; Satoru Sawada, and Nobuo Furutachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

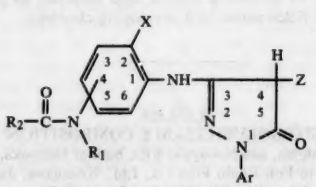
Filed Oct. 22, 1980, Ser. No. 199,125

Claims priority, application Japan, Oct. 23, 1979, 54-136730

Int. Cl.[3] G03C *1/40*

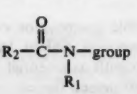
U.S. Cl. 430—505 17 Claims

1. A color photographic light-sensitive element comprising a support having thereon a silver halide emulsion layer containing therein a 3-anilino-5-pyrazolone magenta-color-forming coupler represented by formula (I)



(I)

wherein



(an N-substituted acylamino group) is present at the 4- or 5-position of the anilino group; R_1 represents a substituted or unsubstituted alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, or an aralkyl group; R_2 represents an aliphatic hydrocarbon group, a heterocyclic group, or an aryl group; X represents a halogen atom or an alkoxy group; Z represents hydrogen or a coupling-off group; and Ar represents an aryl group.

4,336,326

OPTICAL BRIGHTENING AGENTS AND PHOTOGRAPHIC MATERIALS WHICH CONTAIN THESE BRIGHTENING AGENTS

Graham Evans, Galleywood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

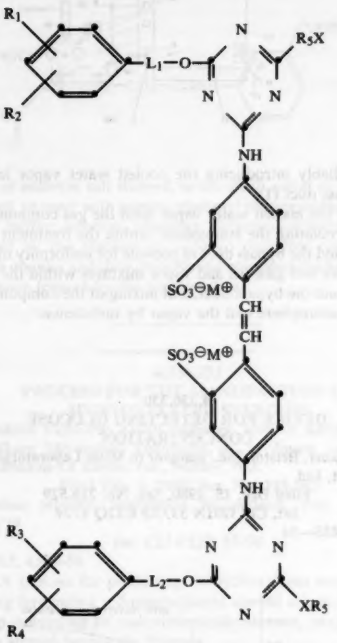
Division of Ser. No. 171,869, Jul. 24, 1980, Pat. No. 4,302,579. This application Apr. 6, 1981, Ser. No. 252,560

Claims priority, application United Kingdom, Aug. 21, 1979, 7929033

Int. Cl.³ G03C 1/76

U.S. Cl. 430—523 5 Claims

1. Photographic material having a white base and at least one silver halide emulsion layer and in one layer of the photographic material on the same side as the silver halide emulsion layer a brightening agent of the formula



(I)

wherein R_1 and R_3 are each hydrogen or methyl, R_2 and R_4 are alkyl having at least six carbon atoms, R_5 is hydrogen or alkyl, aryl or aralkyl, X is —NH—, —O— or —S—, L_1 and L_2 are each alkylene oxide chains having two to 20 alkylene oxide units in the chain and $M^{\oplus}$ is a hydrogen or an alkaline metal cation in a colloid binder.

4,336,327

SILVER HALIDE EMULSION CONTAINING YELLOW COUPLER

Mitsugu Tanaka, and Momotoshi Tsuda, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

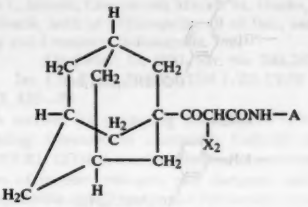
Filed Dec. 17, 1980, Ser. No. 217,302

Claims priority, application Japan, Dec. 17, 1979, 54-163721

Int. Cl.³ G03C 1/40

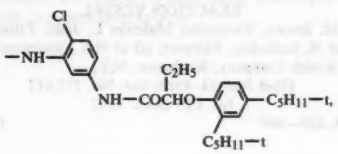
U.S. Cl. 430—556 12 Claims

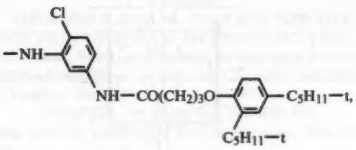
1. A silver halide color photographic light-sensitive material containing a yellow color coupler represented by the following general formula:

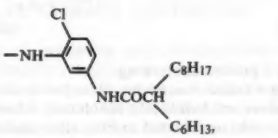


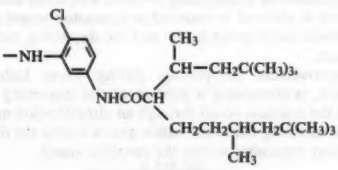
(II)

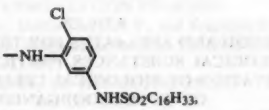
wherein X_2 represents a hydrogen atom or a group capable of coupling off; and A is a group selected from the group consisting of

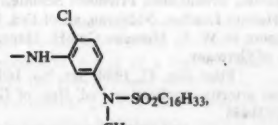


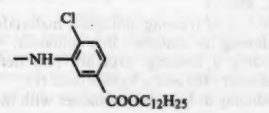




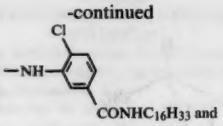




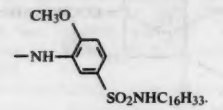




-continued



$CONHC_{16}H_{33}$ and



$SO_2NHC_{16}H_{33}$.

4,336,328

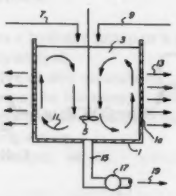
SILVER HALIDE PRECIPITATION PROCESS WITH DELETION OF MATERIALS THROUGH THE REACTION VESSEL

Barry M. Brown, Rochester; Malcolm L. Judd, Pittsford, and Roger N. Schindler, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,612

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—569 **16 Claims**



1. In a process comprising

forming a radiation-sensitive silver halide dispersion by reacting silver and halide salts in solution, wherein the silver and halide salts are reacted to form silver halide grain nuclei in the presence of a dispersing medium and silver halide grain growth is allowed to proceed in a reaction vessel in which the silver halide grain nuclei and the dispersing medium are present,

the improvement comprising, during silver halide grain growth, withdrawing a portion of the dispersing medium from the reaction vessel through an ultrafiltration membrane while retaining the silver halide grains within the dispersing medium remaining within the reaction vessel.

4,336,329

METHOD AND APPARATUS FOR TREATMENT OF BIOLOGICAL SUBSTANCES, PARTICULARLY FOR CULTIVATION OF BIOLOGICAL CELLS AND TISSUES, OR OF MICROORGANISMS

Peter Hesse, Bruchköbel; Friedbert Schinle, Hanau am Main, and Helmut Loscher, Nidderau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,230

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1979, 2924446

Int. Cl.³ C12M *1/36;* C12Q *3/00*

U.S. Cl. 435—3 **32 Claims**

1. Method of treating biological materials comprising

positioning the materials in a container;

providing a housing structure (11) defining a treatment chamber (10) and a bypass duct (1);

introducing at least one container with the materials therein into the chamber;

maintaining the temperature within the chamber at a predetermined temperature level;

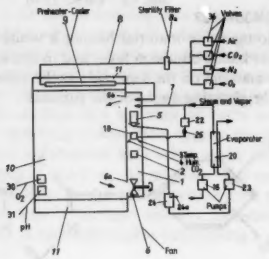
selectively introducing gas components into the chamber;

humidifying the atmosphere within the chamber to provide a predetermined humidity level within the chamber,

wherein the step of providing the predetermined humidity level comprises

generating sterile water vapor;

cooling the water vapor to a desired temperature;



controllably introducing the cooled water vapor into the bypass duct (1);

mixing the cooled water vapor with the gas component;

and circulating the atmosphere within the treatment chamber and the bypass duct to provide for uniformity of atmosphere and gaseous and vapor mixtures within the chamber and the bypass duct, and mixing of the components of the atmosphere and the vapor by turbulence.

4,336,330

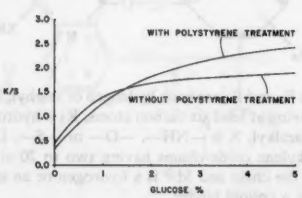
DEVICE FOR DETECTING GLUCOSE CONCENTRATION

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 15, 1980, Ser. No. 216,529

Int. Cl.³ G01N *33/50;* C12Q *1/54*

U.S. Cl. 435—14 **4 Claims**



THE INFLUENCE OF A POLYSTYRENE TREATMENT ON QUANTITATION

1. In a test device for detecting the presence of glucose in a test sample, wherein said device comprises a carrier matrix which has been impregnated with glucose oxidase, peroxidase and a chromogen, the improvement wherein the carrier matrix is impregnated with a solution of from 0.5 percent to 1.5 percent on a weight/volume basis, of polystyrene in a suitable organic solvent, where the impregnation with polystyrene is subsequent to the impregnation with glucose oxidase, peroxidase and chromogen, and where components are present in amounts and proportions such that the device is capable of detecting the presence of from ½ to 10 percent glucose in a sample.

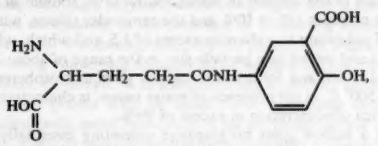
4,336,331

METHOD FOR ASSAYING THE ACTIVITY OF γ-GLUTAMYL TRANSPEPTIDASE IN SERUM

Takeshi Nagasawa; Katsumasa Kuroiwa; Katsuyuki Takabayashi, all of Koriyama; Norimasa Takizawa, Funabashi; Kazuyo Hagihara, Ichikawa, and Tadami Akatsuka, Tsuchiura, all of Japan, assignors to Nitto Boseki Co., Ltd., Fukushima and Iatron Laboratories, Inc., Tokyo, both of, Japan

Division of Ser. No. 94,072, Nov. 14, 1979, Pat. No. 4,281,181.
This application Mar. 20, 1981, Ser. No. 245,817
Claims priority, application Japan, Nov. 16, 1978, 53-14163
Int. Cl.³ C12Q *1/36*
U.S. Cl. 435—24 1 Claim

1. A method for assaying the activity of gamma-glutamyl transpeptidase in serum which comprises allowing the compound L-gamma-glutamyl-3-carboxy-4-hydroxyanilide represented by the formula



(I)

an acid addition salt thereof, or an alkali metal or amine salt thereof, to react with gamma-glutamyl transpeptidase in serum in a buffer solution, allowing 3-carboxy-4-hydroxyaniline formed by the reaction to undergo oxidative condensation with a coupler and then determining colorimetrically a colored substance formed by the condensation.

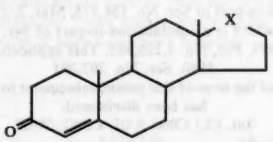
4,336,332

PROCESS FOR THE MANUFACTURE OF HYDROXYLATED STEROIDS

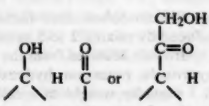
Mitsuhiko Fujiwara; Akiko Fujiwara, both of Kamakura, and Chikara Miyamoto, Yokohama, all of Japan, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Feb. 4, 1980, Ser. No. 118,282
Claims priority, application Switzerland, Feb. 20, 1979, 1675/79
Int. Cl.³ C12P *33/06*
U.S. Cl. 435—58 4 Claims

1. A process for producing 7α-hydroxylated steroids comprising fermenting a 7-unsubstituted steroid selected from the group consisting of dehydroepiandrosterone, pregnenolone, and a steroid having the formula



wherein X represents



with microorganisms of IFO 6469 or Botryodiplodia malorum CBS 134.50 in a culture solution or medium until the 7-unsubstituted steroid is hydroxylated.

4,336,333

PROCESS FOR PREPARING TUNICAMYCIN

Robert L. Hamill, Greenwood; Marvin M. Hoehn, and LaVerne D. Boeck, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 13, 1981, Ser. No. 243,283
Int. Cl.³ C12P *19/60;* C12N *1/20;* C12R *1/52*
U.S. Cl. 435—75 11 Claims

1. A method for preparing tunicamycin which comprises cultivating *Streptomyces chartreusis* Calhoun and Johnson, 1956, NRRL 12338 in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic conditions until a substantial amount of tunicamycin is produced.

11. A biologically pure culture of the strain of *Streptomyces chartreusis* Calhoun and Johnson, 1956, NRRL 12338, and all natural and artificial variants and mutants thereof, which on culturing in a medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic conditions produces tunicamycin.

4,336,334

MICROBIOLOGICAL PROCESS FOR THE PRODUCTION OF POLY(β-HYDROXYBUTYRIC ACID)

Keith A. Powell, Yarm, and Barbara A. Collinson, Peterlee, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 21, 1980, Ser. No. 123,354
Claims priority, application United Kingdom, Feb. 21, 1979, 7906078
Int. Cl.³ C12N *1/32, 1/38;* C12P *7/42*
U.S. Cl. 435—146 6 Claims

1. A method of producing poly(β-hydroxybutyric acid) comprising aerobically culturing a purified methylobacterium organophilum micro-organism strain selected from strains designated by NCIB Nos. 11482 to 11488 inclusive and those mutants and variants derived from said strains that are capable of accumulating poly(β-hydroxybutyric acid) when grown on methanol as a carbon source.

4,336,335

FERMENTATION PROCESS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

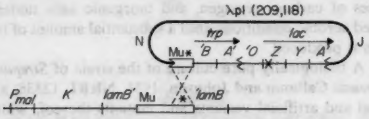
Filed May 22, 1980, Ser. No. 152,239
Int. Cl.³ C12P *7/06*
U.S. Cl. 435—161 13 Claims

1. In a process for producing a water soluble oxygenated hydrocarbon and by-product carbon dioxide gas from the exothermic fermentative action of a microorganism upon a substrate, wherein the improvement comprises scrubbing the by-product carbon dioxide gas with water to recover substantially all of the oxygenated hydrocarbon present therein as a dilute aqueous solution, heating the carbon dioxide gas to a temperature above the temperature of the fermentation medium, and passing the heated gas through at least a portion of fermentation medium to simultaneously vaporize and carry off oxygenated hydrocarbon present in said medium and reduce the temperature of the medium by the effect of evaporative cooling.

4,336,336
FUSED GENE AND METHOD OF MAKING AND USING SAME

Thomas J. Silhavy, Wollaston; Howard A. Shuman, Brookline; Jon Beckwith, Cambridge, all of Mass., and Maxime Schwartz, Paris, France, assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jan. 12, 1979, Ser. No. 3,082
Int. Cl.³ C12N *15/00*
U.S. Cl. 435—172 19 Claims



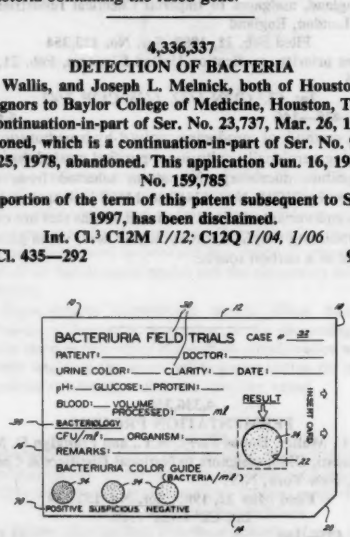
1. A fused gene which comprises a bacterial gene coding for a cytoplasmic protein fused to the non-cytoplasmic directing region of a gene coding for a non-cytoplasmic protein which is normally transported to or beyond the cell surface, such fused gene being capable of coding for a hybrid protein which is transported beyond the periplasmic space and either to the cell surface, or beyond the cell surface, of a bacterial host.

5. A method for making the fused gene of claim 1 which comprises, within a host bacterium, fusing to a gene coding for said cytoplasmic protein the non-cytoplasmic-directing region of a gene coding for a non-cytoplasmic protein, and selecting the bacteria containing the fused gene.

4,336,337
DETECTION OF BACTERIA

Craig Wallis, and Joseph L. Melnick, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 23,737, Mar. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 945,197, Sep. 25, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,785
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Int. Cl.³ C12M *1/12;* C12Q *1/04, 1/06*
U.S. Cl. 435—292 9 Claims



1. A kit for detecting bacteria, comprising:
(a) a cationic dye for staining bacteria at a pH of above 7.0;
(b) a chelating agent effective at a pH of above 7.0;
(c) an acid decolorizing wash at a pH of from 2.7 to 4.0; and
(d) a test substrate, said test substrate including a semi-permeable membrane which permits a test sample including bacteria to flow therethrough and which has a pore size to retain bacteria in the sample on the membrane for coloring thereon, said semi-permeable membrane having a net positive electrostatic surface charge to permit coloring of bacteria thereon with a cationic dye, without the membrane absorbing substantial amounts of said dye, the substrate including color differentiating indicia for providing a reading of bacterial concentration corresponding to color retained on the membrane.

4,336,338
HOLLOW MICROSPHERES OF SILICA GLASS AND METHOD OF MANUFACTURE

Raymond L. Downs, and Wayne J. Miller, both of Ann Arbor, Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 15, 1980, Ser. No. 178,266
Int. Cl.³ C03C *3/00, 3/06, 3/08*
U.S. Cl. 501—12 15 Claims

1. A metal organic gel adapted for use as a starting material in the manufacture of hollow glass microspheres, said gel having an oxide equivalent glass composition consisting essentially of oxides of boron in the amount of about 4% to 10%, potassium in the amount of about 8% to 15%, sodium in the amount of about 1% to 10% and the remainder silicon, with a ratio of potassium to sodium in excess of 1.5, and which, when crushed and sieved to a particle size in the range of about 106 μm to 125 μm and formed into hollow glass microspheres at about 1500° C. in the presence of water vapor, is characterized by a silica concentration in excess of 99%.

5. In a hollow glass microsphere consisting essentially of oxides of silicon, boron, potassium and sodium, the improvement wherein the concentration in mole percent of said oxide of silicon is at least 99%.

4,336,339
HIGH ZIRCONIA FUSED REFRACTORY PRODUCT

Masataro Okumiya, Chigasaki, and Kiyoharu Kuwabara, Yokohama, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,258
Claims priority, application Japan, Mar. 18, 1980, 55-34556
Int. Cl.³ C04B *35/48*
U.S. Cl. 501—103 7 Claims

1. A high zirconia fused refractory product consisting essentially of the following constituents analytically, on a weight basis:
85% to 97% of ZrO_2;
0.1% to 3% of P_2O_5;
2% to 10% of SiO_2;
up to 3% of Al_2O_3; and
being full of rare earth oxide.

4,336,340
PROCESS FOR THE PRODUCTION OF BROKEN-DOWN ORGANIC LIGNIN-CELLULOSE POLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 134,975, Mar. 3, 1980, Pat. No. 4,283,311, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Nov. 17, 1980, Ser. No. 207,391
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.
Int. Cl.³ C08J *9/02;* C08G *18/02*
U.S. Cl. 521—84 27 Claims

1. The process for the production of broken-down organic lignin-cellulose polymer by mixing and reacting the following components:

Component (a): Broken-down alkali metal lignin-cellulose polymer produced by mixing 2 to 5 parts by weight of an alkali metal hydroxide, selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof with 3 parts by weight of a cellulose-containing plant particle, then heating the mixture at from 150° C. to 220° C. while agitating for 5 to 60 minutes;

Component (b): A mono-substituted organic compound having a substituent which will split off during the reaction to said broken-down alkali metal lignin-cellulose

polymer in the amount wherein the mols of the substituted radicals are about equal to the mols of the alkali radicals in the mixture.

4,336,341

PRODUCTION OF POLYISOCYANURATE FOAM

Tsuyoshi Fujiwara, Nagaokakyo; Osamu Sugimoto, Kyoto, and Chuzo Isoda, Uji, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Nov. 26, 1980, Ser. No. 211,275
Claims priority, application Japan, Dec. 4, 1979, 54/157813
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—109 10 Claims

1. In a method for producing polyisocyanurate foam comprising reacting a polysiocyanate component with a polyether-polyol component in the presence of a foaming agent and a catalyst for trimerizing said polyisocyanate, the improvement comrising employing the anhydrous reaction product between a dibasic carboxylic acid anhydride and a partially alcoholated polyether-polyol with an alkali metal hydroxide and/or an alkaline earth metal hydroxide as the polyether-polyol component, whereby said component simultaneously acts as a trimerization catalyst.

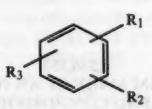
4,336,342

COST REDUCTION OF ACID CURING FOUNDRY BINDERS WITH ALKYLATED AROMATIC HYDROCARBON SOLVENTS

William R. Dunnavant, Columbus, and Young D. Kim, Dublin, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 16, 1981, Ser. No. 244,521
Int. Cl.³ C08K *5/01*
U.S. Cl. 523—144 10 Claims

1. A foundry binder comprising a furan resin and an acid catalyst wherein said resin is a solution of 70% to 95% by weight furan resin and 5 to 30% by weight of a substituted benzene solvent having the formula



wherein R_1, R_2 and R_3 are selected from the group consisting of H, lower alkyl and lower alkoxy and wherein the solvent includes mixtures of such substituted benzenes.

4,336,343

POLYESTER MOLDING COMPOSITIONS HAVING INCREASED CRYSTALLIZATION TEMPERATURES

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 25, 1981, Ser. No. 277,417
Int. Cl.³ C08K *5/09*
U.S. Cl. 523—455 22 Claims

1. A molding composition comprising:
a polyester; and
sodium citrate, wherein the quantity of sodium citrate is selected such that the crystallization temperature of said composition is greater than the crystallization temperature of said polyester.

4,336,344

COMPOSITIONS OF THERMOSETTABLE RESINS AND POLYDIENE RUBBERS HAVING IMPROVED SOLUTION STABILITY

Laurence J. Craigie, Broken Arrow, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 160,798, Jun. 19, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,358
Int. Cl.³ C08L *63/00, 67/06*
U.S. Cl. 525—31 13 Claims

1. In a thermosettable resin composition comprising (a) a resin selected from the group consisting of an unsaturated polyester, a vinyl ester resin and a mixture thereof and (b) a carboxyl terminated polydiene rubber, the improvement wherein said composition includes as a compatibilizing agent a triblock polymer which has an elastomeric central block of the same carboxyl terminated polydiene rubber as (b) with the side blocks being a polyoxyalkylene ether.

4,336,345

COMPOSITION COMPRISING CONDENSATION CROSS-LINKABLE NOVEL METHACRYLATE POLYMERS

Sheldon N. Lewis, Willow Grove, and Richard A. Haggard, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 905,812, May 15, 1978, Pat. No. 4,226,753, which is a division of Ser. No. 517,337, Oct. 23, 1974, Pat. No. 4,103,093, which is a continuation-in-part of Ser. No. 371,921, Jun. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 137,057, Apr. 23, 1971, abandoned. This application May 12, 1980, Ser. No. 149,098
Int. Cl.³ B32B *27/00*; C08F *8/00*
U.S. Cl. 525—107 30 Claims

1. A curable composition comprising (A) an anionically-polymerized addition polymer of at least one ester of methacrylic acid, the polymer comprising mers having condensation-crosslinkable functionality, wherein the average chain length of the polymer, n, is about 6 to about 50 mers; and (B) a crosslinking coreactant; in a weight ratio of (A) to (B) from about 1:99 to about 99:1.

4,336,346

COPOLYMERS CONTAINING BLOCKED ISOCYANATE GROUPS, AND THEIR USE IN ANODIC ELECTROCOATING

Juergen Gimpel; Karl-Heinz Feuerherd, both of Ludwigshafen, and Hans-Uwe Schenck, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,802
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017537
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—109 8 Claims

1. A surface-coating binder based on a copolymer which contains carboxyl groups, blocked isocyanate groups, hydroxyl groups and ether groups and which, due to partial or complete salification with ammonia or with an organic base, is water-soluble or water-dispersible, wherein the copolymer contains, as copolymerized units:

(A) one or more α,β-olefinically unsaturated carboxylic acids of 3 to 5 carbon atoms or a half-ester of an α,β-olefinically unsaturated dicarboxylic acid of 3 to 5 carbon atoms,

(B) from 10 to 35% by weight of an N(1-alkenyl) isocyanate blocked with a CH-, OH- or NH-acidic blocking agent,

(C) from 20 to 50% by weight of an adduct of an epoxy resin, based on bisphenol A and epichlorohydrin and having a molecular weight of from 380 to 3,500, with an olefinically unsaturated alcohol of 3 to 20 carbon atoms, and

(D) from 5 to 64% by weight of one or more copolymerizable olefinically unsaturated compounds not already mentioned under (A) to (C)

with the provisos that the copolymer has a mean molecular weight of from 1,000 to 20,000 and contains component (A), as copolymerized units, in an amount such that the acid number of the copolymer is from 35 to 150 mg of KOH/g, and that the sum of the percentages of (A) to (D) is 100.

4,336,347

PROCESS FOR PRODUCTION OF PHENOLIC RESIN MODIFIED WITH LIQUID POLYBUTADIENE

Masakazu Sagoh, Ibaraki; Takanobu Noguchi, Takatsuki, and Seimei Yasui, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 1, 1980, Ser. No. 192,716

Claims priority, application Japan, Oct. 18, 1979, 54/134777

Int. Cl.³ C08L *61/14*

U.S. Cl. 525—139 **21 Claims**

1. A process for the production of a phenolic resin modified with a liquid polybutadiene which comprises reacting a liquid polybutadiene having a number average molecular weight of 150 to 5,000 with an α,β-unsaturated dicarboxylic acid or its anhydride to obtain an adduct (A), subjecting the adduct (A) to an addition reaction with one or a plurality of phenols in the presence of an acid catalyst to obtain a composition (A) and then reacting the composition (A) with formaldehyde in the presence of a basic catalyst.

4,336,348

THERMOPLASTIC COMPOSITIONS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Dieter Margotte, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,180

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904832

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—146 **12 Claims**

1. A process for the production of a polyester based on a diphenol and a bis-acid halide by the phase boundary process, comprising an aqueous alkaline phase and an inert organic phase, in which the phase boundary process is carried out in the presence of a polymeric compound which is dissolved only in the organic phase and is inert under the conditions of the phase boundary process.

4,336,349

CHLORINATED CYCLOALIPHATIC (METH) ACRYLATE COMPOSITIONS

Hans R. Friedli, Lake Jackson, and Clinton J. Boriack, Freeport both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 62,198, Jul. 30, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,071

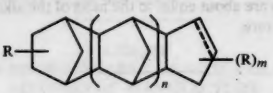
Int. Cl.³ C07C *67/04*; C08F *18/20, 299/00*

U.S. Cl. 525—210 **6 Claims**

1. A chlorinated cycloaliphatic (meth) acrylate composition which comprises the reaction product at a temperature in the range from −30° to 50° C. of chlorine with a cycloaliphatic (meth) acrylate composition having

(A) about 60 to 95 percent by weight of dicyclopentadiene acrylate, dicyclopentadiene methacrylate, or mixtures thereof,

(B) about 2 to 15 percent by weight of a mixture of polycyclopentadienyl acrylates of the formula



where

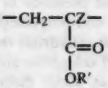
R is $CH_2{=}CZC(O){-}O{-}$

Z is H, or methyl p2 n is 1, or 2

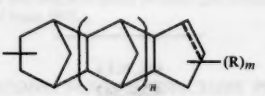
m is 0 or 1 and when m is 0 there is a double bond present,

(C) about 0 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene, methylcyclopentadiene, or mixtures thereof,

(D) about 0.05 to 10 weight percent of a mixture of polyacrylates having the repeating unit:



where R′ is hydrogen or



R is $CH_2{=}CZ{-}C(O){-}O{-}$, Z is hydrogen or methyl, n is 0, 1 or 2, and m is 0 or 1, and when m is 0, there is a double bond present in the cyclopentadienyl group, whereby said reaction product has substantially all the original acrylic unsaturation, substantially no remaining cyclolefinic unsaturation and has 1 to 3 chlorine atoms attached to the cyclopentene ring.

4,336,350

COLD DRAWN FILM MADE OF AN OLEFIN POLYMER BLEND COMPOSITION

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi - Dow Limited, Tokyo, Japan

Division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Jul. 25, 1979, Ser. No. 60,638

Claims priority, application Japan, Oct. 11, 1977, 52/120917; Nov. 22, 1977, 52/139431; May 30, 1978, 53/63870; May 30, 1978, 53/63872

Int. Cl.³ C08L *23/16, 23/12, 23/06, 23/08*

U.S. Cl. 525—211 **17 Claims**

1. A cold drawn film having a tensile strength of not less than 5.0 kg/mm² and a haze of not more than 4.0% which film comprises a homogeneous blend of the combination of components (B)+(C) wherein the components of the composition are in amounts such as to satisfy $0.90 \geqq B/(B+C) \geqq 0.30$ in terms of weight ratio;

(B) is a thermoplastic elastomer having a density of not more than 0.91 g/cm³ and made of an ethylene-α-olefin copolymer, and

(C) is at least one selected from the group consisting of crystalline polypropylene, high-density polyethylene and crystalline polybutene-1.

4,336,351

MODIFIED EP AND EPDM BLENDS WITH A COLD FLOW ADDITIVE

Bernard F. Cinadr, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 117,607, Feb. 7, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,231

Int. Cl.[3] C08L *23/16, 23/12*

U.S. Cl. 525—211 9 Claims

1. A raw and uncured heterogeneous composition that does not have a continuous polypropylene phase comprising, an essentially linear polymer of ethylene and propylene which normally exhibits plastic flow under ambient temperatures and storage conditions, said polymer of ethylene and propylene having yield strength of about 20 to 200 PSI, ultimate tensile strength of about 20 to 300 PSI, gel content of 1% or less and a low ethylene sequence index of less than about 25, and a sufficient amount up to about 20% by weight of added crystalline polypropylene having an average particle size of about $\frac{1}{8}$" or in the range of about 0.1 to 1 millimeter to reduce the plastic flow but without significantly altering original physical properties of said polymer.

4,336,352

BLEND OF THREE ETHYLENE POLYMERS

Hisaya Sakurai; Yoshihiko Katayama; Tadashi Ikegami, and Shigeru Mizutani, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 11, 1980, Ser. No. 176,739

Claims priority, application Japan, Aug. 24, 1979, 54-107129

Int. Cl.[3] C08L *23/06, 23/08, 23/18*

U.S. Cl. 525—240 7 Claims

1. A composition comprising a mixture of three polymers (A), (B) and (C) which are selected from the group consisting of homopolymers of ethylene and copolymers of ethylene with a member selected from the group consisting of propylene, butene, pentene, 4-methylpentene-1, hexene, octene, and decene, the composition being characterized in that:

(i) the viscosity average molecular weight of (A) is 1,000–100,000, the viscosity average molecular weight of (B) is 100,000–1,000,000, the viscosity average molecular weight of (C) is 400,000–6,000,000, the molecular weight ratio of (B) to (A), (B/A), is 2–200, and the molecular weight ratio of (C) to (B), (C/B), is 1.5 or more,

(ii) the mixing ratio of (A) to (B), (A/B), is 30/70 to 70/30 and the mixing ratio of (C) to the total composition is 1–10% by weight,

(iii) melt index of the composition is 0.001–1, and

(iv) density of the composition is 0.976–0.935.

4,336,353

SALTS OF 3-METHYL-2-(2',4'-DIMETHYL-PHENYLIMINO)-4-THIAZOLINE WITH POLYMERS CONTAINING SULFONIC ACID GROUPS

Christian d'Hondt, Riehen; Dieter Lohmann, Muttenz, and Ernst Neuenschwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

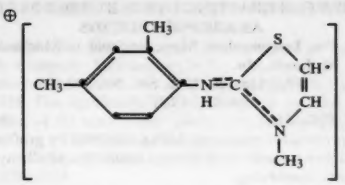
Filed Sep. 2, 1980, Ser. No. 183,560

Claims priority, application Switzerland, Sep. 11, 1979, 8205/79; Mar. 11, 1980, 1900/80

Int. Cl.[3] C08F *8/30*

U.S. Cl. 525—275 2 Claims

1. A salt formed from a cation of the formula



and an anion polymer selected from the group consisting of polyvinylsulfonic acids, polystyrenesulfonic acids, poly[N-(sulfoalkyl)-acrylamide], sulfonated cation exchangers from styrene and about 0.5–12 percent by weight of divinyl benzene (crosslinking agent) and sulfonated cation exchangers having macroporous structures, the proportion of the cation being at least 5% relative to the number of recurring structural elements of the polymer.

4,336,354

METHOD OF PREPARING STYRENE-MALEIC ANHYDRIDE MOLDING COMPOSITION

Frank E. Lordi, and Jacob Triplett, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 26, 1981, Ser. No. 247,690

Int. Cl.[3] C08F *279/02*

U.S. Cl. 525—301 1 Claim

1. The method of making a thermoplastic composition useful in molding, extrusion, thermoforming, and the like which method comprises:

separately preparing a high impact polystyrene by copolymerizing alkadiene and a monomeric vinyl aromatic compound to provide a high impact polystyrene consisting essentially of from 4 to 16% alkadiene and 84 to 96% styrene, the molecular weight of said high impact polystyrene being at least 20% greater than the molecular weight of the hereinafter designated thermoplastic composition product;

preparing a solution of said high impact polystyrene in monomeric vinyl aromatic compound as a solvent and using said solution in the hereafter designated liquid system;

polymerizing to form an interpolymer in a liquid system featuring a monomeric vinyl aromatic compound as a solvent, a minor concentration of an unsaturated dicarboxylic acid moiety, said liquid system containing from 5 to 25 weight % of said high impact polystyrene, the polymerization conditions being so controlled that the interpolymer contains both (a) from 5 to 15 weight % moiety of unsaturated dicarboxylic acid, and (b) from 5 to 25 weight % of said high impact polystyrene;

devolatilizing the thus formed interpolymer to remove substantially all of said monomeric vinyl aromatic compound to provide an interpolymer a thermoplastic composition product derived predominantly from vinyl aromatic compound and comprising both (a) from 5 to 15 weight % moiety of unsaturated dicarboxylic acid, and (b) from 5 to 25 weight % of said high impact polystyrene; and

shaping said devolatilized interpolymer into particles of thermoplastic composition, said composition consisting of the interpolymer of 5 to 15% moiety of unsaturated dicarboxylic acid, 5 to 25% high impact polystyrene, and the balance vinyl aromatic compound.

4,336,355

PROCESS FOR GRAFTING LARGE RUBBER PARTICLES AS ABS POLYBLENDS

Wan C. Wu, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 20, 1980, Ser. No. 198,674
Int. Cl.³ C08F 291/02
U.S. Cl. 525—316 18 Claims

1. A process for preparing ABS polyblends by grafting large diene rubber particles with alkenyl aromatic and alkenyl nitrile monomers comprising:

A. charging an aqueous latex containing diene rubber solids to a mixing zone, said rubber being dispersed in said latex by an anionic surfactant as particles having an average particle size diameter of about 0.05 to 0.20 microns,

B. mixing a water soluble organic acid anhydride having an ionization constant higher than that of the acid member of the anionic surfactant in said aqueous latex,

C. agglomerating said rubber particles, contained in said latex, to larger agglomerated particles having an average particle size of about 0.30 to 1.0 microns,

D. stabilizing said larger agglomerated rubber particles in said latex by the addition of a sufficient amount of an alkali metal salt of a polyfunctional carboxylic oligomeric surfactant to said latex to stabilize said latex,

E. polymerizing a mixture of alkenyl aromatic and alkenyl nitrile monomers in the presence of said stabilized latex so as to form a matrix phase polymer of said monomers and graft said agglomerated rubber particles with at least a portion of said monomers, providing a latex containing said grafted rubber particles and said matrix polymer essentially free of coagulum, and

F. separating said matrix polymers having said grafted diene rubber particle dispersed therein from said latex as an ABS polyblend.

4,336,356

PRODUCTION OF OZONIDES FROM UNSATURATED POLYMERS

Shaul M. Aharoni, Morris Plains; Dusan C. Prevorsek, Morristown; George J. Schmitt, Madison; Gary A. Harpell, Morristown, and Lester T. C. Lee, Parsippany, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 969,917, Dec. 15, 1978. This application Aug. 25, 1980, Ser. No. 180,753
Int. Cl.³ C08F 8/06
U.S. Cl. 525—388 19 Claims

1. A process for selectively ozonizing a carbon-carbon double bonds of an olefinically unsaturated organic polymer also containing carbon-carbon single bonds having a number average molecular weight larger than about 40,000 with between about 0.1 and 10 percent of the backbone carbon-carbon bonds being unsaturated, comprising:

dissolving the olefinically unsaturated organic polymer in a solvent system having a first component which is less reactive than said double bonds but more reactive than said single bonds toward ozone and a second component which is inert to ozone under the reaction conditions; and

contacting the resulting solution with ozone containing gas, thereby forming an ozonide.

4,336,357

SUPERFICIALLY HYDROLYZED BIOCOMPATIBLE POLYAMIDE MATERIAL

Francesco Bartoli, Rome; Walter Marconi, San Donato Milanese; Franco Morisi, and Francesco Pittalis, both of Rome, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 26,892, Apr. 4, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 172,957
Claims priority, application Italy, Apr. 12, 1978, 22222 A/78
Int. Cl.³ C08G 69/48
U.S. Cl. 525—420 9 Claims

1. A process for the preparation of a biocompatible polyamide material, said process consisting essentially of subjecting a polyamide material to superficial hydrolysis by reacting said polyamide material with a 3 to 4 normal hydrogen chloride solution and removing substantially all unreacted hydrogen chloride by first washing with a base and then washing with water.

4,336,358

ORGANOPOLYSILOXANE-URETHANE-VINYL GRAFT COPOLYMERS

Heinrich Alberts; Hans Friemann, both of Cologne; Hans Sattlegger, Odenthal, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,093
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947966
Int. Cl.³ C08F 283/12, 283/02
U.S. Cl. 525—439 8 Claims

1. A graft copolymer comprising (I) as a first polymeric moiety an organopolysiloxane with OH functional groups, (II) as a second polymeric moiety a polyester-urethane, and (III) units of vinyl monomers, units of the first and second polymeric moieties being linked via vinyl polymer bridges, all these units having been polymerized in the presence of mixtures of the first and second polymeric moieties, the first polymeric moiety being present in about 10–90% by weight, the second polymeric moiety being present in about 5–85% by weight, and the polymerized units of vinyl compounds being present in about 5 to 85% by weight.

4,336,359

NITRIC ACID STABILIZED THERMOSETTABLE RESINS

Virginia B. Messick, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 26, 1981, Ser. No. 277,770
Int. Cl.³ C08L 63/00
U.S. Cl. 525—531 12 Claims

1. A thermosettable resin composition having improved storage stability, said composition comprising a vinyl ester resin, an unsaturated polyester or a mixture thereof and a stabilizing amount of nitric acid.

4,336,360

PROCESS FOR THE STEREOREGULAR POLYMERIZATION OF ALPHA-OLEFINS

Umberto Giannini; Antonio Cassata; Paolo Longi, all of Milan, and Romano Mazzocchi, Pernate, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 955,762, Oct. 30, 1978, Pat. No. 4,187,196, which is a continuation of Ser. No. 795,363, May 9, 1977, abandoned, which is a continuation-in-part of Ser. No. 503,766, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 265,455, Jun. 23, 1972, abandoned. This application Feb. 1, 1980, Ser. No. 117,789
Claims priority, application Italy, Jun. 25, 1971, 26275 A/71
The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—114 1 Claim

1. Process for the stereoregular polymerization of alpha-olefins of the formula CH_2=CHR wherein R is an alkyl radical having 1–6 carbon atoms and mixtures thereof with ethylene, which process comprises polymerizing the olefins in contact with a catalyst the starting catalyst-forming components of which comprise:

(a) an addition reaction product of an electron-donor compound (or Lewis base) selected from the group consisting of esters of silicic acid with an Al-trialkyl compound or with an Al-alkyl compound containing two or more Al atoms linked together through an oxygen or a nitrogen

atom, the amount of Al-alkyl compound contained in a combined form with the ester in catalyst-forming component (a) being from 0.05 to 1.0 mole per mole of the starting Al-compound; and

(b) the product obtained by contacting a Ti compound selected from the group consisting of halogenated bi-, tri-, and tetravalent Ti compounds and complexes of said Ti compounds with an electron-donor compound, with a support which comprises, as the essential support material thereof, an anhydrous bihalide of Mg or Mn in an active state such that the X-rays powder spectrum of component (b) does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of normal, nonactivated Mg or Mn bihalide, the X-rays powder spectrum of component (b) showing a broadening of said most intense diffraction lines.

4,336,361

PROCESS OF PREPARING LINEAR POLYDIVINYLBENZENE

Teiji Tsuruta, Yokohama, and Yoshiaki Nitadori, Nobeoka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

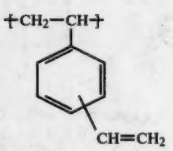
Division of Ser. No. 58,595, Jul. 18, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,529

Claims priority, application Japan, Apr. 23, 1979, 54/48965; Apr. 23, 1979, 54/48966

Int. Cl.³ C08F *4/46*

U.S. Cl. 526—180 **12 Claims**

1. A process of preparing a linear polydivinylbenzene having recurring units of Formula (A),



(A)

and a number average molecular weight of about 500 to about 1,000,000, which comprises adding lithium diisopropylamide and divinylbenzene to an inert polar solvent in the presence of diisopropylamine.

4,336,362

ACETYLENE-TERMINATED DIANIL MONOMER AND THE POLYMER THEREFROM

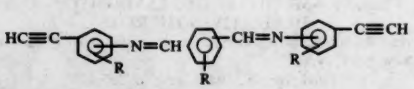
Theodore R. Walton, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 102,293, Dec. 10, 1979, Pat. No. 4,283,557. This application Mar. 2, 1981, Ser. No. 239,833

Int. Cl.³ C08F *38/00*

U.S. Cl. 526—248 **6 Claims**

1. The polymer obtained by heating from about the melting point to about 300° C. the compound with the formula



wherein R is selected from the class consisting of H—, F—, Cl— $CH_{3-n}F_n$, and $CH_{3-n}Cl_n$ and n is an integer from 1 to 3.

4,336,363

HEAT CURABLE COMPOSITIONS CONTAINING SULFONIUM SALTS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 11,102, Feb. 12, 1979, Pat. No. 4,230,814. This application Oct. 9, 1980, Ser. No. 195,322

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ G03C *1/68*; C08F *16/12*

U.S. Cl. 526—333 **10 Claims**

1. Heat curable compositions comprising

(A) a cationically polymerizable organic material

(B) an effective amount of a thermal curing agent consisting essentially of an organic oxidant and an aryl sulfonium salt selected from the class consisting of a triarylsulfonium salt and an aryl acyl dialkyl sulfonium salt.

4,336,364

METHOD OF PRODUCING ORGANOSILICON COMPOSITION WITH IN SITU PRODUCED CURE INHIBITOR

Myron T. Maxson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 20, 1981, Ser. No. 284,769

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—15 **16 Claims**

1. A method of preparing a storage stable, one part, heat curable organosilicon composition consisting essentially of

(A) mixing (1) an organosilicon polymer having an average of from one to three groups per silicon atom selected from the group consisting of monovalent hydrocarbon radicals, aliphatic-unsaturation-free monovalent halohydrocarbon radicals, and cyanoalkyl radicals, there being an average per molecule of (1) of at least two monovalent hydrocarbon radicals containing aliphatic unsaturation, the remaining valences of the silicon atoms of said organosilicon polymer being satisfied by divalent radicals selected from the group consisting of divalent oxygen atoms, divalent hydrocarbon radicals, divalent hydrocarbon ether radicals, and divalent haloarylene radicals, said divalent radicals linking silicon atoms; (2) a platinum catalyst in an amount of at least 0.1 part by weight of platinum per one million parts by weight of the combined weights of organosilicon polymer (1) and organosilicon compound (5); (3) an acetylenic alcohol, liquid at the reaction conditions of step (B) and distillable at temperatures of less than 120° C. at a pressure of 133 pascal, in an amount sufficient to provide at least one mole of acetylenic radical for each 3 moles of silicon-bond hydrogen atoms in siloxane compound (4); (4) a siloxane compound having at least 3 silicon-bonded hydrogen atoms with no more than one silicon-bonded hydrogen atom per silicon atom, the organic groups on the silicon atoms being monovalent hydrocarbon radicals having no aliphatic unsaturation, the siloxane compound being a linear, branched, or cyclic molecule containing from 3 to 100 siloxane units, then

(B) heating to a temperature which is between 100° and 150° C. and which is also above the temperature at which an olefinic siloxane compound formed by the reaction of the acetylenic alcohol (3) and the siloxane compound (4) is no longer an inhibitor for the reaction in a closed container for a time sufficient to allow the reaction to produce the olefinic siloxane compound,

(C) cooling to below 50° C.,

(D) reducing pressure over the reaction mixture to an amount sufficient to remove any unreacted acetylenic alcohol (3), then

(E) admixing (5) an organosilicon compound containing silicon-bonded hydrogen atoms, there being in addition an average of up to 2 monovalent organic radicals per silicon atom selected from the group consisting of monovalent hydrocarbon radicals free of aliphatic unsaturation, mono-

valent halohydrocarbon radicals free of aliphatic unsaturation, and cyanoalkyl radicals, the remaining valences of the silicon atoms being satisfied by divalent radicals selected from the group consisting of divalent oxygen atoms, divalent hydrocarbon radicals free of aliphatic unsaturation, divalent hydrocarbon ether radicals, and divalent haloarylene radicals, said divalent radicals linking silicon atoms, there being an average of at least two silicon-bonded hydrogen atoms per molecule of organosilicon compound (5), the sum of the average number of aliphatic unsaturated monovalent radicals per molecule of organosilicon polymer (1) and the average number of silicon-bonded hydrogen atoms per molecule of organosilicon compound (5) being at least 4, the organosilicon composition further restricted in that the amount of organosilicon polymer (1) is sufficient to control the reaction exotherm.

4,336,365

PROCESS FOR THE CONTINUOUS PREPARATION OF POLYISOCYANATES CONTAINING URETDIONE GROUPS AND THEIR USE AS STARTING COMPONENTS FOR THE PRODUCTION OF POLYURETHANE RESINS

Artur Reischl; Bernd Quiring, and Claus Rathjen, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,782

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005106

Int. Cl.³ C08G *18/00*

U.S. Cl. 528—44 **4 Claims**

1. A process for the continuous preparation of polyisocyanates containing uretdione groups comprising dimerizing aromatic polyisocyanates which are free from uretdione groups in the presence of catalysts which accelerate the dimerization of isocyanates, at −30° to 90° C. in a self-cleaning, coolable screw reactor with continuous feeding in of the free polyisocyanate and of the dimerization catalyst, and in the presence of from 3 to 90% by weight, based on the whole mixture, of an additive containing hydroxyl groups, which additive comprises either (i) a compound within the molecular weight range of from 62 to 10,000 containing at least one hydroxyl group or (ii) a mixture of several compounds having an average molecular weight within the range of from 62 to 10,000 containing at least one hydroxyl group, wherein said hydroxyl-containing compound or compounds are added to the reaction mixture before the completion of the dimerization reaction.

4,336,366

THERMALLY POLYMERIZABLE MIXTURES AND PROCESSES FOR THE THERMALLY-INITIATED POLYMERIZATION OF CATIONICALLY POLYMERIZABLE COMPOUNDS

Godwin Berner, Rheinfelden, and Rudolf Kirchmayr, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,465

Claims priority, application Switzerland, Feb. 29, 1980, 1627/80

Int. Cl.³ C08F *2/50*; C08K *5/06, 5/11*; C08G *65/10*

U.S. Cl. 528—89 **13 Claims**

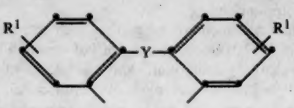
1. A thermally polymerisable mixture containing

(A) one or more cationically polymerisable compounds,

(B) a catalytic amount of an aromatic iodonium salt of the formula I

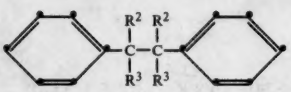
$$[(Ar^1)(Ar^2)I]+[MX_n]^- \quad (I)$$

in which Ar^1 and Ar^2 independently of one another are phenyl, naphthyl or phenyl which is substituted by one or more of the radicals C_1–C_8-alkyl, phenyl, phenoxy, halogen, nitro or C_1–C_4-alkoxy, or Ar^1 and Ar^2 together are a divalent radical of the formula II



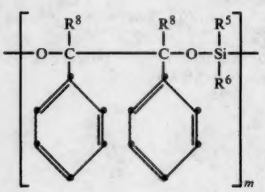
(II)

in which Y is a direct bond, —O—, —S—, or —CH_2— and R^1 is C_1–C_4-alkyl, halogen, nitro or C_1–C_4-alkoxy, M is a metal atom or metalloid atom from the series comprising B, P, As, Sb, Sn, Bi and Fe, X is fluorine or chlorine and n is 4, 5 or 6 and 1 larger than the valency of M, and (C) a catalytic amount of a compound of the formula III



(III)

in which R^2 is C_1–C_4-alkoxy, —$OCOR^4$ or —$O\text{-}Si(R^5)(R^6)(R^7)$ and R^4 is C_1–C_8-alkyl or phenyl and R^5, R^6 and R^7 independently of one another are C_1–C_4-alkyl or phenyl and R^3 is phenyl or C_1–C_4-alkyl, or of a compound of the formula IV



(IV)

in which R^8 is phenyl, cyclohexyl or C_1–C_4-alkyl and m is 2 to 20.

4,336,367

EPOXY ADHESIVE COMPOUNDS

David R. Morris, Beltsville, and Porter W. Erickson, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1969, Ser. No. 827,475

Int. Cl.³ C08L *63/00*

U.S. Cl. 524—770 **11 Claims**

1. An adhesive composition of matter comprising the resin obtained by the admixture of a 3,4-epoxycyclohexylalkyl 3,4-epoxycyclohexanecarboxylate, exo-exo bis(2,3-epoxycyclopentyl) ether, endo-exo bis(2,3-epoxycyclopentyl) ether and a trialkoxyboroxine.

4,336,368

4 DEOXY-4-METHYLENE OLEANDOMYCIN AND DERIVATIVES THEREOF

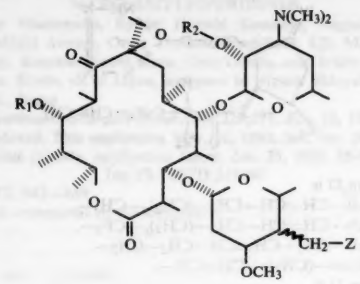
Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,620

Int. Cl.³ C07H *17/08*; A01N *9/00*

U.S. Cl. 536—7.2 **19 Claims**

1. A compound having the formula



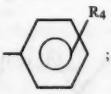
wherein

R_1 is hydrogen or trimethylsilyl;

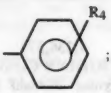
R_2 is hydrogen or alkanoyl having from two to three carbon atoms;

Z is H, OR_3, $COOR_3$, SR_3', $S(O)R_3'$, $S(O)_2R_3'$, CN or $-(CH_2)_n-NR_5R_6$;

R_3 is hydrogen, alkyl having from one to four carbon atoms or

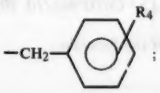


R_3' is alkyl having from one to four carbon atoms or

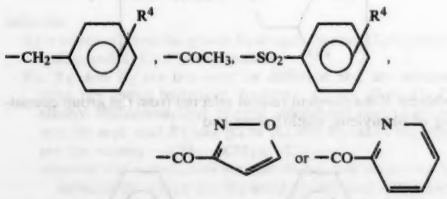


R_4 is hydrogen, chloro, bromo, alkyl having from one to four carbon atoms or alkoxy having from one to four carbon atoms;

R_5 is hydrogen or



R_6 is hydrogen,



R_5 and R_6 when taken together with the nitrogen to which they are attached are phthalimido; and

n is 0 or 1;

or a pharmaceutically acceptable acid addition salt thereof.

4,336,369

SELECTIVELY PROTECTED 1-N-(ω-AMINOALKOXYCARBONYL)-SISOMICIN DERIVATIVES

Uwe Petersen, Leverkusen; Eckart Voss, Cologne, and Peter Stadler, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

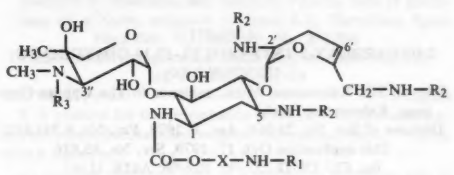
Filed May 13, 1980, Ser. No. 149,384

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921974

Int. Cl.³ C07H *15/22*; A61K *31/71*

U.S. Cl. 536—13.9 **3 Claims**

1. A compound of the formula I



in which

X represents a straight-chain, branched or cyclic saturated or unsaturated aliphatic radical with 2 to 10 C atoms,

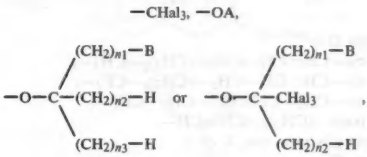
R_1 represents hydrogen, C_1–C_4-alkyl or benzyl,

R_2 represents CO—R_4 or S—R_5 and

R_3 represents S—R_5,

wherein

R_4 denotes a radical of the formulae



A denotes phenyl which is unsubstituted or substituted by 1 to 3 substituents, said substituents being trifluoromethyl, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl and phenyl, or 1 to 5 halogen atoms,

B denotes hydrogen or phenyl which is unsubstituted or substituted by 1 to 3 substituents, said substituents being trifluoromethyl, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl and phenyl, or 1 to 5 halogen atoms,

n_1, n_2 and n_3 denote a number from 0 to 5, Hal denotes fluorine, chlorine or bromine and

R_5 denotes phenyl or di- or tri-phenylmethyl which is unsubstituted or substituted by 1 to 3 substituents, said substituents being trifluoromethyl, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl and phenyl,

or 1 to 5 halogen atoms.

2. A compound according to claim 1, wherein

X denotes C_2–C_6-alkylene and

R_1 denotes hydrogen.

4,336,370

PROCESS FOR ACTIVATING CELLULOSE PULP TO IMPROVE EASE OF ESTERIFICATION

V. M. Yasnovsky, Sloatsburg, and Donald M. MacDonald, Monroe, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,913

Int. Cl.³ C08B *1/02*

U.S. Cl. 536—58 **13 Claims**

1. A process for the preparation for esterification of dis-

solving pulp derived from wood pulp wherein no further mechanical refining is required which comprises:

(a) treating dissolving pulp in slurry, sheet or flake form with 0.5 to 10% on an oven dry pulp weight basis of a carboxylic acid, of from 2 to about 18 carbon atoms; and

(b) for at least two hours prior to initiation of conventional esterification procedures maintaining the carboxylic acid-cellulose pulp mixture produced in step (a) above under conditions wherein substantial loss of carboxylic acid is prevented.

4,336,371

2-DECARBOXY-2-TETRAZOLYL-13,14-DIHYDRO-PG$_2$ COMPOUNDS

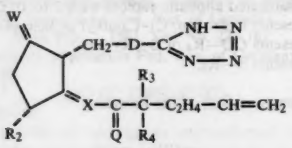
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611. This application Oct. 17, 1979, Ser. No. 85,616

Int. Cl.^{3} C07D *257/06, 409/08;* **A61K** *31/41*

U.S. Cl. 542—429 **1 Claim**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

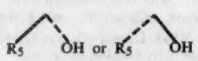
(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,

(4) trans—(CH$_2$)$_3$—CH=CH—,

wherein g is zero, one, 2, or 3,

wherein Q is

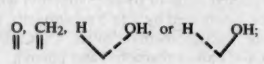


wherein R$_5$ is hydrogen or methyl,

wherein R$_2$ is hydrogen, hydroxyl, or hydroxymethyl;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is —CH$_2$CH$_2$—.

4,336,372

2-DECARBOXY-2-TETRAZOLYL-PG$_2$ COMPOUNDS

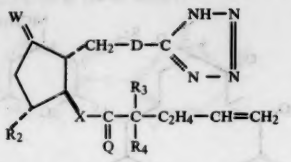
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611. This application Oct. 17, 1979, Ser. No. 85,617

Int. Cl.^{3} C07D *257/06, 409/08;* **A61K** *31/41*

U.S. Cl. 542—429 **1 Claim**

1. A compound of the formula



wherein D is

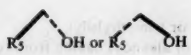
(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—,

(4) trans—(CH$_2$)$_3$—CH=CH—,

wherein Q is



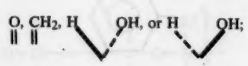
wherein g is zero, one, 2, or 3,

wherein R$_5$ is hydrogen or methyl,

wherein R$_2$ is hydrogen, hydroxyl, or hydroxymethyl;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is cis— or trans—CH=CH— or —C≡C—.

4,336,373

BIS-PIPERIDINE COMPOUNDS

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Otsu; Yoshiaki Yoshikuni, Uji; Masahiro Yagi, Kusatsu; Kohei Kura, Omi-Yahata, and Ichiro Shirahase, Kyoto all of Japan, assignors to Nippon Shinyaku Company, Ltd., Japan

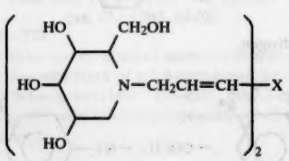
Continuation-in-part of Ser. No. 229,278, Jan. 28, 1981, abandoned. This application Mar. 26, 1981, Ser. No. 247,885

Claims priority, application Japan, Jan. 28, 1980, 55-9173

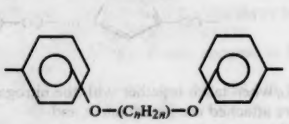
Int. Cl.^{3} C07D *401/10, 401/12*

U.S. Cl. 542—447 **11 Claims**

1. A compound of the formula:



wherein X is a divalent radical selected from the group consisting of phenylene, naphthylene and



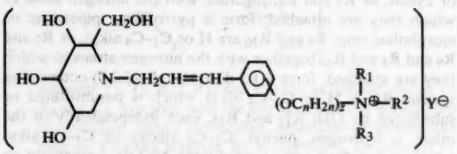
in which n is 2 or 3.

4,336,374
QUATERNARY AMMONIUM SUBSTITUTED N-CINNAMYLPIPERIDINES

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Otsu; Yoshiaki Yoshikuni, Uji; Masahiro Yagi, Kusatsu; Kohei Kura, Omi-Yahata, and Ichiro Shirahase, Kyoto, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Continuation-in-part of Ser. No. 229,277, Jan. 28, 1981, abandoned. This application Mar. 26, 1981, Ser. No. 247,884
Claims priority, application Japan, Jan. 28, 1980, 55-9174
Int. Cl.[3] C07D *211/46*
U.S. Cl. 542—469 **12 Claims**

1. A compound of the formula:



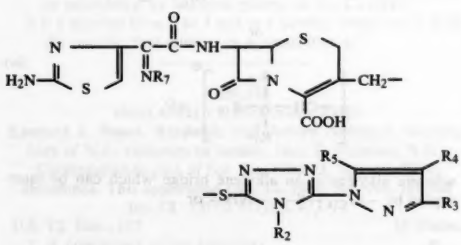
wherein
n has a value of 2 or 3,
z has a value of 0 or 1,
R^1 is alkyl of 1 to 6 carbon atoms, each of R^2 and R^3 is alkyl of 1 to 6 carbon atoms or
R^2 and R^3 when taken together, together with the nitrogen atom to which they are bound, are 1-morpholinylidene, 1-pyrrolidinylidene or 1-piperidinylidene; and
$Y^{\ominus}$ is a pharmaceutically acceptable cation.

4,336,375
CEPHALOSPORANIC ACID DERIVATIVES

James H. Booth, Montvale, N.J., and Adma S. Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 30, 1980, Ser. No. 145,071
Int. Cl.[3] C07D *501/36*
U.S. Cl. 544—027 **14 Claims**

1. A compound of the formula:



wherein
R_2 is selected from the group hydrogen, amino, C_1–C_6 alkylamino and di-C_1–C_6-alkylamino;
R_3, R_4, and R_5 are the same or different and are selected from the group hydrogen, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, trifluoromethyl, phenyl, substituted phenyl, heterocyclic aryl, and R_3 and R_4 or R_4 and R_5 taken together are the moiety —CH_2—$(CH_2)_2$—CH_2—;
wherein the substituents on the phenyl are mono- or di-substituents which are the same or different and which are selected from the group C_1–C_3 alkyl, C_1–C_3 alkoxy, fluoro, chloro, bromo, and trifluoromethyl; and
wherein the heterocyclic aryl is selected from the group of five- and six-membered aromatic ring compounds containing one to three heteroatoms which are the same or different and which are selected from the group oxygen, nitrogen, and sulfur, and wherein said heterocyclic aryl is optionally substituted as defined above for substituted phenyl;
R_7 is C_1–C_6 alkoxy;
and the pharmaceutically acceptable non-toxic salts thereof.

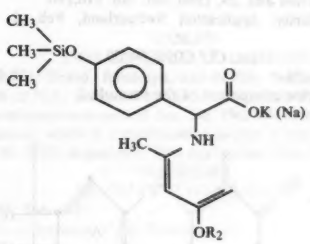
4,336,376
PROCESS FOR THE PREPARATION OF 7-(D(−)-ALPHA-AMINO-P-HYDROXY-PHENYLACETAMIDO)DESACETOXYCEPHALOSPORANIC ACID

Antonio L. P. Coll, Barcelona; Jose D. Meseguer, Granollers; Asuncion E. Bianchini, and Esteve S. Pitarch, both of Barcelona, all of Spain, assignors to Gema, S.A., Barcelona, Spain

Filed Feb. 17, 1981, Ser. No. 234,896
Claims priority, application Spain, Feb. 20, 1980, 488.783
Int. Cl.[3] C07D *501/04*
U.S. Cl. 544—030 **5 Claims**

1. A process for the preparation of 7-(D(−)-alpha-amino-p-hydroxyphenylacetamido)desacetoxycephalosporanic acid, which comprises:

(a) reacting one equivalent of a sodium or potassium salt of D(−)-p-hydroxy-N-(1-alkoxycarbonyl-2-propenyl)-alpha-aminophenylacetic acid with one equivalent of trimethylsilyl-2-oxazolidinone at a temperature of from 20° to 25° C., to provide a compound V of the general formula:



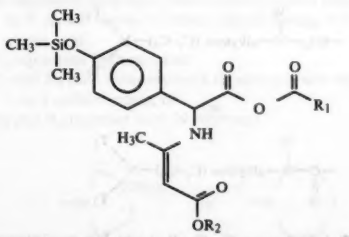
(V)

in which R_2 may be ethyl or methyl;

(b) reacting in situ the compound of general formula V with a compound VI of the general formula:

(VI)

to provide a solution containing a mixed anhydride III of the general formula:

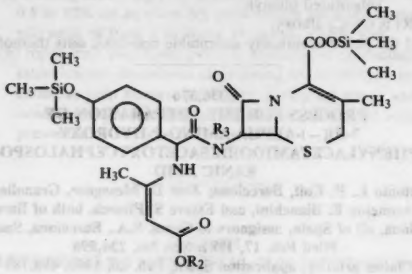


(III)

in which R_1 may be methoxy, ethoxy, phenyl or a C_4–C_9 aliphatic chain;

(c) reacting in situ said mixed anhydride of general formula III with silylated 7-aminodesacetoxycephalosporanic acid, obtained by silylation in acetonitrile with trimethyl-

silyl-2-oxazolidinone, to provide a solution containing a compound of the general formula:



in which R_3 is a hydrogen atom or a trimethylsilyl group, followed by unblocking in situ and precipitation to provide 7-(D(−)-alpha-amino-p-hydroxyphenylacetamido)-desacetoxycephalosporanic acid.

4,336,377

BASIC DIOXAZINE COMPOUNDS

Jean-Marie Adam, St. Louis, and Pierre Galafassi, Rixheim, both of France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

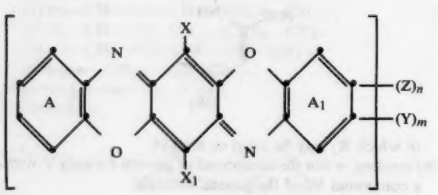
Filed Jan. 28, 1980, Ser. No. 116,196

Claims priority, application Switzerland, Feb. 2, 1979, 1041/79

Int. Cl.³ C09B *19/00*

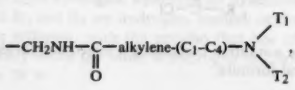
U.S. Cl. 544—74 **10 Claims**

1. A dioxazine compound of the formula I

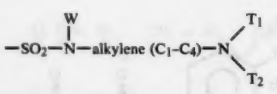


(I)

wherein Z is (a) a basic group of the formula

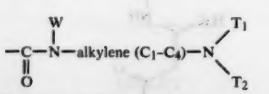


(i)



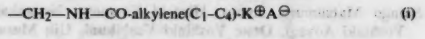
(ii)

or



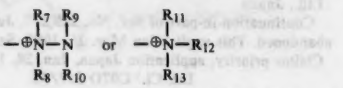
(iii)

wherein T_1 is hydrogen; C_1–C_4 alkyl which is unsubstituted or substituted by OH; cyclohexyl which is unsubstituted or substituted by 1–3 methyl groups; or phenyl; T_2 is C_1–C_4 alkyl which is unsubstituted or substituted by hydroxyl; or T_1 and T_2, together with the nitrogen atom to which they are attached, form a pyrrolidine, pyridine, morpholine or piperazine ring; and W is hydrogen or C_1–C_4 alkyl which is unsubstituted or substituted by OH or C_1–C_4 alkoxy; or (b) a cationic group of the formula

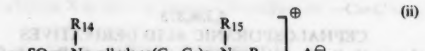


(i)

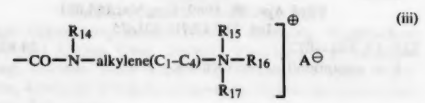
in which $K^{\oplus}$ is a radical of the formula



wherein R_7 and R_8, each independently of the other, is C_1–C_4 alkyl which is unsubstituted or substituted by OH, carbamoyl or cyano, or R_7 and R_8, together with the nitrogen atom to which they are attached, form a pyrrolidine, piperidine or morpholine ring; R_9 and R_{10} are H or C_1–C_4 alkyl; or R_7 and R_9 and R_8 and R_{10} together with the nitrogen atoms to which they are attached, form a 1,2-diazabicyclo-(3.3.0)-octane ring system; R_{11} is H or C_1–C_4 alkyl which is unsubstituted or substituted by OH; R_{12} and R_{13}, each independently of the other, is hydrogen, phenyl, C_1–C_4 alkoxy or C_1–C_4 alkyl which is unsubstituted or substituted by OH, carbamoyl or NH_2; or R_{11} and R_{12}, together with the nitrogen atom to which they are attached, form a piperadine, pyrrolidine or morpholine ring; or R_{11}, R_{12} and R_{13}, together with the nitrogen atom to which they are attached, form a pyridine ring which is unsubstituted or substituted by methyl, OH, NH_2, carboxy or CN or is annulated to form a quinoline radical; or R_{11}, R_{12} and R_{13}, together with the nitrogen atom to which there are attached, form a 1,4-diazabicyclo-(2.2.2.)-octane ring system; or Z is a cationic group of the formula

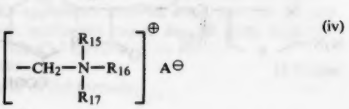


(ii)



(iii)

or



(iv)

wherein alkylene is an alkylene bridge which can be interrupted by —O—, —S—, —NH— or

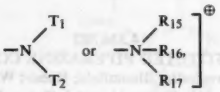
R_{14} is H or C_1–C_4 alkyl; R_{15} and R_{17}, each independently of the other, is C_1–C_4 alkyl; R_{16} is C_1–C_4 alkyl, C_1–C_4 alkoxy or NH_2; or R_{15} and R_{16} together with the nitrogen to which they are attached is pyridinium; A^- is an anion;

Y is an anionic group;

each of X and X_1, independently of the other, is H; halogen; CN; C_1–C_4 alkyl; phenyl which is unsubstituted or substituted by C_1–C_4 alkyl or halogen; $NHCOR_1$ wherein R_1 is C_1–C_4 alkyl, cyclohexyl, aryl which is unsubstituted or substituted by C_1–C_4 alkyl or halogen, or R_1 is a heterocycle selected from the group consisting of furane, thiophene, pyridine, quinoline, phenylthiazole and phenyl-

triazole; $OCOR_2$ wherein R_2 is C_1–C_4 alkyl which is unsubstituted or substituted by phenyl, or R_2 is cyclohexyl;

wherein R_4 and R_5, each independently of the other, is hydrogen, cyclohexyl, aryl, C_1–C_4 alkyl which is unsubstituted or substituted by phenyl,



wherein T_1, T_2, R_{15}, R_{16} and R_{17} are as defined above, or R_4 and R_5, together with the nitrogen atom to which they are attached, form a pyrrolidine, piperidine or morpholine ring; or $COOR_6$ wherein R_6 is hydrogen, cyclohexyl or C_1–C_4 alkyl which is unsubstituted or substituted by OH or phenyl;

each of the benzene radicals A and A_1, independently of the other, is unsubstituted or substituted by one or more substituents selected from the group consisting of halogen; CN; C_1–C_8 alkyl which is unsubstituted or substituted by phenyl; phenyl which is unsubstituted or substituted by halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; COOH; NO_2; NH_2; mono- or di-(C_1–C_4)-alkyl amino; NHCO—C_6H_5; $NHCOR_{18}$ where R_{18} is C_1–C_4 alkyl which is unsubstituted or substituted by phenyl, C_1–C_4 alkoxy, cyclohexyl or phenyl which is unsubstituted or substituted by halogen, C_1–C_4 alkoxy, C_1–C_4 alkyl, NO_2 or CN; SCN; benzothiazole which is unsubstituted or substituted by C_1–C_4 alkyl; C_1–C_4 alkoxy which is unsubstituted or substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, OH or phenyl; phenoxy which is unsubstituted or substituted by C_1–C_4 alkyl; NHR_{19} wherein R_{19} is H or phenyl which is unsubstituted or fused with a hetero ring to form a benzoxazole, benzthiazole or benzimidazole; C_1–C_4 alkylsulfonyl; or $CONHR_{20}$, wherein R_{20} is phenyl which is unsubstituted or substituted by halogen, phenyl or C_1–C_4 alkyl;

n is a number from 1 to 4 and m a number from 0 to 2, with the proviso that number m is small than n.

4,336,378

ISOXAZOLYL INDOLAMINES

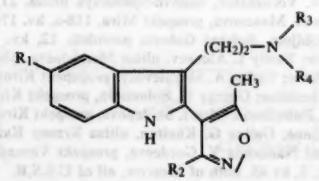
Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 138,873, Apr. 10, 1980, abandoned. This application Oct. 14, 1980, Ser. No. 196,784

Int. Cl.³ C07D *413/04, 413/14*

U.S. Cl. 544—137 **10 Claims**

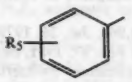
1. A compound of the formula



wherein

R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms, and

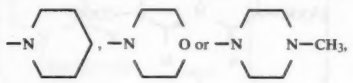
R_2 represents lower alkyl, i.e., alkyl having 1 to 4 carbon atoms, or



where R_5 represents hydrogen, fluoro, chloro, lower alkyl as defined above or lower alkoxy as defined above, and

R_3 and R_4 each independently represent lower alkyl as defined above, and

R_3 and R_4 together with N represent



or a pharmaceutically acceptable acid addition salt thereof.

4,336,379

ISOXAZOLYL INDOLAMINES

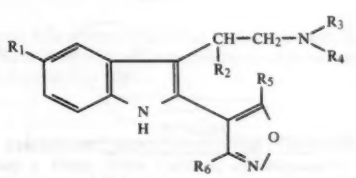
Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Continuation-in-part of Ser. No. 196,785, Oct. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 138,872, Apr. 10, 1980, abandoned. This application Mar. 18, 1981, Ser. No. 245,188

Int. Cl.³ C07D *413/04, 413/14*

U.S. Cl. 544—137 **21 Claims**

1. A compound of the formula



(I)

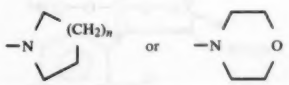
wherein

R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms, and

R_2 represents hydroxy, and

R_3 and R_4 each independently represent lower alkyl having 1 to 4 carbon atoms, or

R_3 and R_4 together with N represent



wherein

n is 1, 2 or 3, and

R_5 and R_6 each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms,

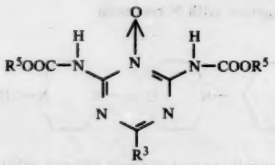
or a pharmaceutically acceptable acid addition salt thereof.

4,336,380
OXADIAZOLOTRIAZINE DERIVATIVES

Jean-Claude Muller, Rixheim, France, and Henri Ramuz, Birsfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 61,068, Jul. 26, 1979, Pat. No. 4,267,417. This application Feb. 17, 1981, Ser. No. 234,538
Claims priority, application Switzerland, Jul. 31, 1978, 8184/78; May 15, 1979, 4505/79
Int. Cl.³ C07D *251/66*
U.S. Cl. 544—198 5 Claims

1. A compound of the formula



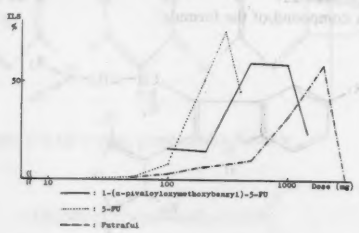
IV

wherein R^3 is diallylamino or 3,6-dihydro-1(2H)-pyridyl and R^5 is alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms-alkyl of 1 to 8 carbon atoms, benzyl, phenethyl, phenyl, halophenyl, dihalophenyl, methoxyphenyl, dimethoxyphenyl, nitrophenyl, tolyl, methoxycarbonylphenyl, naphthyl or allyl.

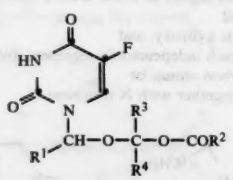
4,336,381
5-FLUOROURACIL DERIVATIVES

Wataru Nagata, Nishinomiya, and Susumu Kamata, Takarazuka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Nov. 3, 1980, Ser. No. 203,363
Claims priority, application Japan, Nov. 8, 1979, 54/145131
Int. Cl.³ C07D *239/55*
U.S. Cl. 544—313 13 Claims



1. A compound of the formula



wherein

R^1 is C_6 to C_{10} aryl or C_6 to C_{10} aryl substituted by halogen, C_1 to C_5 alkyl, C_1 to C_5 haloalkyl, C_1 to C_5 alkoxy, nitro, cyano or carboxy,

R^2 is C_1 to C_{30} straight or branched chain alkyl, C_3 to C_{11} cyclic alkyl wherein the cyclic moiety is 3 to 6 membered, adamantyl, C_6 to C_{10} aryl or C_6 to C_{10} aryl substituted by halogen, C_1 to C_5 alkyl, C_1 to C_5 haloalkyl, C_1 to C_5 alkoxy, nitro, cyano or carboxy, and

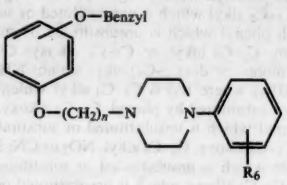
R^3 and R^4 are the same or different and each is hydrogen or lower alkyl.

4,336,382
1,4-DISUBSTITUTED PIPERAZINE COMPOUNDS

Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, and Jefferson W. Tilley, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 73,051, Jun. 6, 1979, Pat. No. 4,247,710, which is a division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,206,129. This application Aug. 25, 1980, Ser. No. 181,256
Int. Cl.³ C07D *405/10*
U.S. Cl. 544—374 11 Claims

1. The compound of the formula



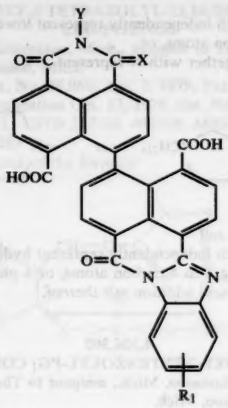
wherein R_6 is hydrogen or lower alkoxy and n is 2 to 20.

4,336,383
1-1-BINAPHTHYL-4,4',5,5',8,8'-HEXACARBOXYLIC ACID COMPOUNDS, METHOD OF PREPARATION AND USE THEREOF FOR THE SYNTHESIS OF ASYMMETRIC DERIVATIVES OF 3,4,9,10-PERYLENETETRACARBOXYLIC ACID, AND FOR DYEING AND PRINTING OF TEXTILE MATERIALS

Georgy N. Vorozhtsov, Sadovo-Spasskaya ulitsa, 21, kv. 268; Natalia N. Masanova, prospekt Mira, 118-a, kv. 174; Nikolai B. Feldbljum, Bolshoi Golovin pereulok, 12, kv. 10, all of Moscow; Vasily I. Alexeev, ulitsa Mendeleeva, 33-b, kv. 83, Rubezhnoe; Vadim A. Shigalevsky, propspekt Kirova, 26, kv. 60, Rubezhnoe; Georgy G. Solomatin, prospekt Kirova, 10-b, kv. 16, Rubezhnoe; Olga I. Shulepova, prespekt Kirova, 30-49, Rubezhnoe; Galina G. Khaitun, ulitsa Krasny Kazanets 17-127, and Nadezhda V. Gordeeva, prospekt Vernadskogo, 89 kerpus, 5, kv 45, both of Moscow, all of U.S.S.R.

Filed May 7, 1980, Ser. No. 147,600
Int. Cl.³ C07D *519/00, 487/06, 487/16, 487/22*
U.S. Cl. 546—52 1 Claim

1. 1,1'-binaphthyl-4,4',5,5',8,8'-hexacarboxylic acid compounds of the formula:



wherein R_1 is selected from the group consisting of hydrogen, halogen, or alkyl; X is oxygen; and Y is selected from the group consisting of hydrogen, alkyl, cycloalkyl, or an aryl containing at least one substituent selected from the group consisting of halogen, alkyl, or alkoxy.

4,336,384

PREPARATION OF 4-AMINO-3,5,6-TRICHLOROPICOLINIC ACID

Edwin R. Henson, Lake Jackson, and David J. Koranek, Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1981, Ser. No. 257,308
Int. Cl.³ C07D *213/55, 213/57*
U.S. Cl. 546—327 **7 Claims**

1. A method of preparing 4-amino-3,5,6-trichloropicolinic acid which comprises reacting 3,4,5,6-tetrachloropicolinonitrile with ammonium hydroxide and acidifying the so-formed reaction mixture to precipitate said 4-amino-3,5,6-trichloropicolinic acid.

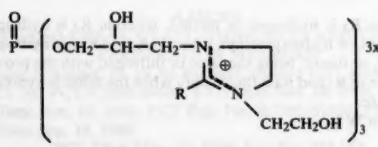
4,336,385

PHOSPHATE IMIDAZOLINIUM COMPOUNDS

Raymond L. Mayhew, Summit, and Anthony J. O'Lenick, Jr., Fairlawn, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Division of Ser. No. 965,458, Nov. 30, 1978, Pat. No. 4,209,449. This application Apr. 4, 1980, Ser. No. 137,197
Int. Cl.³ C07F *9/65*
U.S. Cl. 548—112 **2 Claims**

1. Phosphate quaternary compound of the formula



wherein

x represents chloride, and

R represents an alkyl group of seven to seventeen carbon atoms.

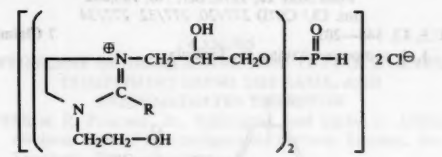
4,336,386

QUATERNARY IMIDAZOLINIUM PHOSPHITE DERIVATIVES

Anthony J. O'Lenick, Jr., Fairlawn, and Raymond L. Mayhew, Summit, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Division of Ser. No. 965,457, Nov. 30, 1978, Pat. No. 4,243,602. This application Jun. 13, 1980, Ser. No. 159,409
Int. Cl.³ C07F *9/65*
U.S. Cl. 548—112 **2 Claims**

1. Quaternary compound of the formula



wherein R is alkyl of 7 to 17 carbon atoms.

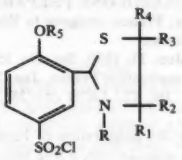
4,336,387

THIAZOLIDINE-SUBSTITUTED PHENYL SULFONYL CHLORIDES

Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,358
Int. Cl.³ C07N *277/04*
U.S. Cl. 548—146 **8 Claims**

1. A compound of the formula



wherein R is selected from alkyl, aryl and aralkyl; R_1, R_2, R_3 and R_4 each are selected from hydrogen, alkyl and phenyl; and R_5 is hydrogen or acyl.

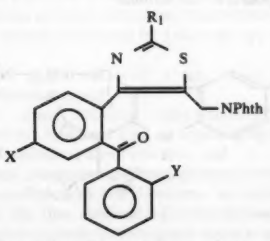
4,336,388

THIAZOLYL BENZOPHENONE COMPOUNDS

Rodney I. Fryer, North Caldwell, and Norman W. Gilman, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 161,713, Jun. 23, 1980, Pat. No. 4,269,774. This application Dec. 15, 1980, Ser. No. 216,097
Int. Cl.³ C07D *417/06*
U.S. Cl. 548—194 **1 Claim**

1. A compound of the formula



wherein X and Y are hydrogen or halogen, R_1 is lower alkyl or NR_2R_3

wherein R_2 and R_3 are hydrogen or lower alkyl and Phth is phthaloyl.

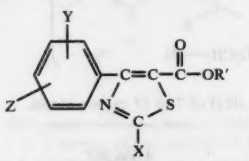
4,336,389

2-SUBSTITUTED-4-ARYL-5-THIAZOLECARBOXYLIC ACIDS AND THEIR DERIVATIVES AS SAFENING AGENTS

Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 15, 1978, Ser. No. 905,682
Int. Cl.³ C07D *277/20, 277/32, 277/34*
U.S. Cl. 548—201 **7 Claims**

1. A compound having the formula



wherein X is selected from the group consisting of halogen, lower alkoxy, phenoxy and halophenoxy; Y and Z are independently selected from the group consisting of hydrogen, halogen, trifluoromethyl, nitro and lower alkyl; and R′ is hydrogen, lower alkyl or agriculturally acceptable cations.

4,336,390

BENZOXAZOLONE PREPARATION

Noël Rouy, Lesigny, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jun. 11, 1980, Ser. No. 158,494
Claims priority, application France, Jun. 20, 1979, 79 16334
Int. Cl.³ C07D *263/58*
U.S. Cl. 548—221 **16 Claims**

1. A process for the preparation of benzoxazolone, which comprises reacting salicylamide, a free base of salicylamide or an alkali metal phenate of salicylamide, with an alkali metal hypochlorite in an aqueous reaction medium comprising an alkali metal hydroxide, the alkali metals comprising said hypochlorite and said hydroxide including both sodium ions and potassium ions, and with the amount of sodium and potassium ions present being sufficient to effectively maintain a readily stirrable and homogenizable reaction medium.

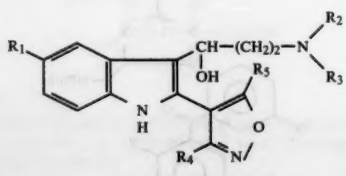
4,336,391

ISOXAZOLYL INDOLAMINES

Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Filed Apr. 6, 1981, Ser. No. 251,068
Int. Cl.³ C07D *261/06, 209/10, 209/12, 209/14*
U.S. Cl. 548—247 **6 Claims**

1. A compound of the formula

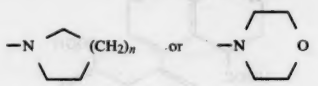


wherein

R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms, and

R_2 and R_3 each independently represent lower alkyl having 1 to 4 carbon atoms, or

R_2 and R_3 together with N represent



wherein

n is 1, 2 or 3, and

R_4 and R_5 each independently represent hydrogen or lower alkyl having 1 to 4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

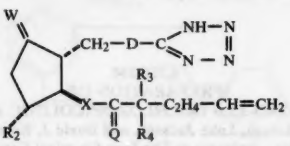
4,336,392

2-DECARBOXY-2-TETRAZOLYL-PG$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

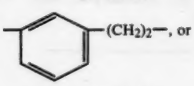
Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611.
This application Oct. 17, 1979, Ser. No. 85,618
Int. Cl.³ C07D *257/06, 409/08;* **A61K** *31/41*
U.S. Cl. 548—253 **1 Claim**

1. A compound of the formula

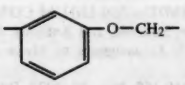


wherein D is

(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_3-CH_2-CF_2-$,
(3) $-(CH_2)_3-O-CH_2-$,
(4) $-(CH_2)_2-O-(CH_2)_2-$,
(5) $-CH_2-O-(CH_2)_3-$,

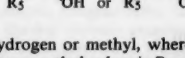


(6)



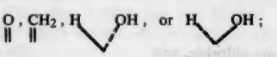
(7)

wherein g is zero, one, two, or three; wherein Q is



wherein R_5 is hydrogen or methyl, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is cis- or trans—CH=CH— or —C≡C—.

4,336,393

2-DECARBOXY-2-TETRAZOLYL-13,14-DIHYDRO-PG$_1$ COMPOUNDS

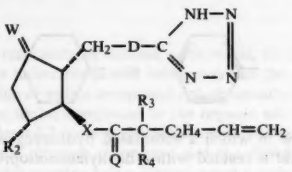
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611. This application Oct. 17, 1979, Ser. No. 85,619

Int. Cl.^{3} C07D *257/06, 409/08;* **A61K** *31/41*

U.S. Cl. 548—253 **1 Claim**

1. A compound of the formula



wherein D is

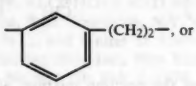
(1) $-(CH_2)_3-(CH_2)_g-CH_2-$,

(2) $-(CH_2)_3-CH_2-CF_2-$,

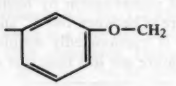
(3) $-(CH_2)_3-O-CH_2-$,

(4) $-(CH_2)_2-O-(CH_2)_2-$,

(5) $-CH_2-O-(CH_2)_3-$,

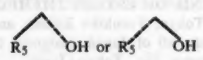


(6) $-(CH_2)_2-$, or

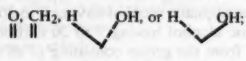


(7)

wherein g is zero, one, two, or three; wherein Q is



wherein R_5 is hydrogen or methyl, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl; wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein W is



and wherein X is $-CH_2CH_2-$.

4,336,394

CYANO-UREAS, CYANO-THIOUREAS AND THEIR PREPARATION METHODS

Pierre J. Baudet, 15. ch. de Passoret, Geneva 1227, Switzerland

PCT No. PCT/CH80/00037, § 371 Date Nov. 14, 1980, § 102(e) Date Nov. 13, 1980, PCT Pub. No. WO80/01914, PCT Pub. Date Sep. 18, 1980

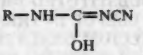
PCT Filed Mar. 14, 1980, Ser. No. 217,112

Claims priority, application Switzerland, Mar. 14, 1979, 2393/79

Int. Cl.^{3} C07D *233/54*

U.S. Cl. 548—342 **3 Claims**

1. Cyano-ureas having the formula:



characterized by the imino-nitrile tautomer structure, wherein R is a 2-((4-methyl-5imidazolyl) methylthio ethyl radical.

4,336,395

ETHYLENE BRIDGED AMINE FUNCTIONAL SILANES, COMPOSITES USING THE SAME, AND INTERMEDIATES THEREFOR

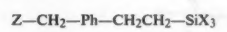
William R. Peterson, Jr., Fallsington, and Barry C. Arkles, Oreland, both of Pa., assignors to Petrarch Systems, Inc., Levittown, Pa.

Filed Mar. 12, 1980, Ser. No. 129,766

Int. Cl.^{3} C07F *7/10*

U.S. Cl. 556—413 **7 Claims**

1. An ethylene bridged benzylamine trifunctional silane of the formula:



wherein Ph is a phenyl group ($-C_6H_4-$), at least one X is a hydrolyzable group and Z is aminoethylamino.

4,336,396

PROCESS FOR THE PREPARATION OF 4-[2-(DIMETHYLAMINO)-ETHOXY]2-METHYL-5-(1-METHYLETHYL)-PHENOL ESTERS AND THEIR SALTS

Claudio Giordano, Monza, and Aldo Belli, Novara, both of Italy, assignors to Blasinachim S.p.A., Milan, Italy

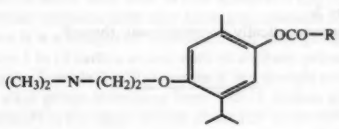
Filed Dec. 4, 1980, Ser. No. 212,796

Claims priority, application Italy, Dec. 20, 1979, 28251 A/79

Int. Cl.^{3} C07C *79/46, 67/42*

U.S. Cl. 560—20 **3 Claims**

1. Process for the preparation of the products having the following formula:



(I)

wherein R is a member selected from the group consisting of a hydrogen atom, an alkyl radical, an unsubstituted aryl radical and an aryl radical substituted by a nitro group, characterized in that

(a) thymol is reacted with a salt of an 1-halo-dimethylaminoethane, and

(b) the thus obtained ethylamine-N,N-dimethyl-2-(thymyloxy) is reacted with an acylating agent according to the Friedel and Kraft reaction, and

(c) the thus obtained 4-[2-(dimethylamino)-ethoxy]-2-methyl-5-(1-methylethyl)-1-acyl-benzene is oxidated and, if desired, the thus obtained 4-[2-(dimethylamino)-ethoxy]-2-methyl-5-(1-methylethyl-phenol esters is added with an organic or inorganic acid.

4,336,397

2,4-DIOXO-4-SUBSTITUTED-1-BUTANOIC ACID DERIVATIVES USEFUL IN TREATING URINARY TRACT CALCIUM OXALATE LITHIASIS

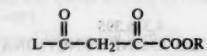
Edward J. Cragoe, Jr., Lansdale, Pa.; Arthur A. Patchett, Westfield, N.J.; Clarence S. Rooney, Worcester, Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 29, 1980, Ser. No. 221,159

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—51 **8 Claims**

1. A compound of the formula:

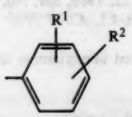


(I)

where

R is hydrogen or C_{1-4} alkyl and

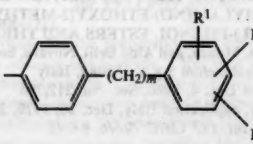
L is a lipophilic group consisting essentially of:



(1)

where

R^1 and R^2 are each independently selected from the group consisting of (a) hydrogen; (b) C_{4-12} straight or branched chain alkyl; (c) C_{4-7} cycloalkyl; and (d) tetrahydronaphthyl; provided that R^1 and R^2 may not both be hydrogen; and when one of R^1 or R^2 is tetrahydronaphthyl, the other must be some other substituent; and that positions 2 and 6 of the substituted phenyl moiety may not be substituted; and



(2)

where R^1, and R^2 have the same meaning as above except tetrahydronaphthyl;

R^3 is bromine, chlorine, or fluorine;

m is 0 to 3;

or a pharmaceutically acceptable salt thereof.

4,336,398

PROCESS FOR THE PREPARATION OF BASIC ESTERS OF SUBSTITUTED HYDROXYCYCLOHEXANECARBOXYLIC ACIDS

Giorgio Sagramora, Padua, Italy, assignor to Laboratorio Guidotti & C. S.p.A., Pisa, Italy

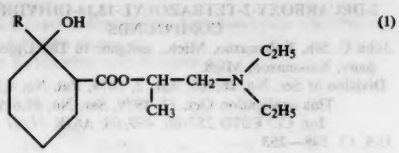
Filed Nov. 23, 1979, Ser. No. 96,938

Claims priority, application Italy, Nov. 24, 1978, 30163 A/78

Int. Cl.³ C07C *69/76*

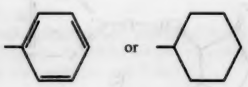
U.S. Cl. 560—59 **5 Claims**

1. In a process for the preparation of an ester from mixed esters of substituted hydroxycyclohexanecarboxylic acids involving the thermal isomerization of said mixture of esters, the process comprising preparation of basic esters of substituted hydroxycyclohexanecarboxylic acids having general formula

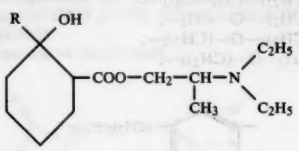


(I)

wherein R represents



of the type in which a substituted hydroxycyclohexanecarboxylic acid is reacted with a diethylaminoisopropyl hydrochloride, giving place to an isomer mixture comprising the desired basic ester having the formula (1) and the isomer thereof having the formula



characterized in that the reaction mixture, after isolation, is subjected to thermal isomerization by heating for at least 3 hours at a temperature of between 160° C. and 240° C., and the thus heated mixture is fractionatedly distilled under reduced pressure at a temperature not less than that of said heating.

4,336,399

PROCESS FOR PRODUCING CARBOXYLIC ACIDS AND/OR ESTERS THEREOF

Tomiya Isshiki, Tokyo; Yasuhiko Kijima, and Yuh Miyauchi, both of Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

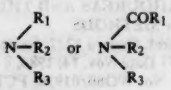
Continuation of Ser. No. 946,525, Sep. 26, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,591

Claims priority, application Japan, Sep. 29, 1977, 52-117171

Int. Cl.³ C07C *67/36, 69/76, 51/12*

U.S. Cl. 560—61 **8 Claims**

1. A process for producing a carboxylic acid and/or its ester, which comprises reacting an alcohol selected from the group consisting of an aliphatic alcohol having 1 to 20 carbon atoms and an aromatic alcohol having 7 to 20 carbon atoms, or an ether selected from the group consisting of an aliphatic ether having 2 to 30 carbon atoms and an aromatic ether having 7 to 30 carbon atoms, with carbon monoxide in the presence of (1) elemental nickel or a nickel compound, (2) an organic nitrogen compound selected from the group consisting of (a) a compound of the formula



wherein R_1, R_2 and R_3 are identical or different and each represents hydrogen, alkyl or aryl, (b) a heterocyclic compound of trivalent nitrogen, and (c) a nitrile, and (3) iodine or an iodine compound selected from the following formulae (I) to (IV),

RX_n (I)

wherein R represents a hydrogen atom or an alkyl or alkylene group, X represents an iodine or bromine atom, and n is an integer of 1 to 3, at least one of n-X's being an iodine atom,

I_2 or I_3– (II)

RCOI (III)

wherein R represents an alkyl group,

MI_2 (IV)

wherein M represents an alkaline earth metal; the amount of the iodine or iodine compound being such that the amount of the free iodine or iodine compound not chemically bonded to the nickel or nickel compound or the organic nitrogen compound is at least 0.2 mole as elemental iodine per mole of each of the organic nitrogen compound and the nickel or nickel compound; the reaction being carried out at a carbon monoxide partial pressure of from 4 to 70 kg/cm^2-G.

4,336,400

3-(HYDROXY OR HYDROXYMETHYL)-4-HYDROXY-ALPHA(AMINOMETHYL)BENZYL ALCOHOLS AND METHODS OF USE

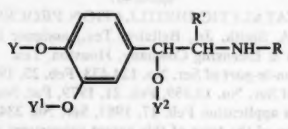
Hiroaki Minatoya, East Greenbush, N.Y.; Benjamin F. Tullar, Laurel Park, N.C., and Walter D. Conway, Amherst, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 654,700, Feb. 2, 1976, Pat. No. 4,138,581, which is a continuation-in-part of Ser. No. 496,538, Aug. 12, 1974, which is a division of Ser. No. 123,834, Mar. 12, 1971, Pat. No. 3,904,671, which is a continuation-in-part of Ser. No. 812,370, Apr. 1, 1969, abandoned. This application Aug. 30, 1978, Ser. No. 937,949

Int. Cl.^{3} C07C *69/76*

U.S. Cl. 560—73 **81 Claims**

1. An ester of 3,4-dihydroxy-alpha-(amino- and N-substituted amino-methyl)benzyl alcohol having the formula



wherein

R is hydrogen, alkyl having 1–4 carbon atoms, or cycloalkyl having 3–6 carbon atoms;

R′ is hydrogen or ethyl;

Y is an acyl member which is alkanoyl having 1–22 carbon atoms, alkenoyl having one or two double bonds and having 4–22 carbon atoms, cycloalkyl—C_nH_{2n}—CO— having a total of 4–10 carbon atoms of which 3–7 are ring carbon atoms in cycloalkyl and wherein n is zero, one or two, 1- or 2-adamantanecarbonyl, phenoxyacetyl, naphthalenecarbonyl, or Z—C_nH_{2n}—CO— wherein n is zero, one or two and Z is phenyl substituted by 1–3 members of the group consisting of alkoxy having 1–4 carbon atoms, and

Y^1 and Y^2 are the same or different and are hydrogen or one of the acyl members defined by Y, and

wherein at least one of Y and Y^1 contains no less than four carbon atoms when R is tert-butyl or cycloalkyl and no less than seven carbon atoms when R is hydrogen or alkyl other than tert-butyl;

or a pharmaceutically acceptable acid-addition salt thereof.

4,336,401

PROCESS FOR THE PREPARATION OF DAMASCENONE

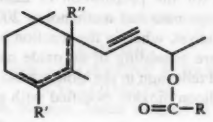
Lumbertus A. Hulshof, Hoevelaken, Netherlands, assignor to Hercules Incorporated, Wilmington, Del.

Filed Jul. 17, 1980, Ser. No. 169,681

Int. Cl.^{3} C07C *69/76, 67/02*

U.S. Cl. 560—106 **10 Claims**

1. A method of preparing 1-crotonoyl-2,6,6-trimethylcyclohexa-1,3-diene which comprises treating a compound having the general formula



where R is a 1 to 6 carbon alkyl group, a phenyl radical or an alkylphenyl radical, the dotted lines represent a sole double bond in the 1- or 2-position or conjugated double bonds in the 1,3-position, and when the double bond is in the 1-position only, R′ is hydroxyl or

and R″ is absent, when the double bond is in the 2-position, R″ is hydroxyl and R′ is absent, and when conjugated double bonds are present, R′ is hydrogen and R″ is absent with a catalytic amount of an essentially anhydrous mineral or organic proton acid reagent in an organic solvent capable of forming an azeotrope with water.

4,336,402

PROCESS FOR THE PREPARATION OF N-ALKYL-MONOSUBSTITUTED CARBAMIC ACID ESTERS

Samuel J. Falcone, West Chester, and John J. McCoy, Media, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 30, 1980, Ser. No. 173,579

Int. Cl.^{3} C07C *125/065*

U.S. Cl. 560—157 **20 Claims**

1. A process for the preparation of an N-alkyl-monosubstituted carbamic acid ester which comprises reacting an unsubstituted carbamic acid ester having the formula NH_2CO_2R wherein R is a straight or branched chain alkyl group containing from 1 to 18 carbon atoms, with an aliphatic primary amine having the formula $R'NH_2$ wherein R′ is a straight or branched chain alkyl group containing from 1 to 18 carbon atoms, at a temperature in the range of from about 125° C. to 250° C. in the presence of a monohydric aliphatic alcohol having from 1 to 18 carbon atoms.

11. A process according to claim 1 wherein the process is carried out in the presence of a catalytic amount of from about 0.01 to 35 mole percent based on the aliphatic primary amine employed of a tertiary amine containing from 1 to 18 carbon atoms and selected from the group consisting of trialkylamines, triphenylamine, n-dodecyldimethylamine, n-tetradecyldimethylamine, n-hexyldecyldimethylamine, n-octyldecyldimethylamine, N,N,N′,N′-tetramethylethylenediamine, N,N-dioctyl-1-octylamine, 1,4-diazabicyclo-[2.2.2]octane, 4(N,N-dimethylamino)-pyridine, pyridine, 1,5-diazabicyclo[3.4.0]non-5-ene, 1,8-diazabicyclo[5.4.0]-undec-7-ene, 1,1,3,3-tetramethylbutylamine, methyldiethylamine, butyldimethylamine, and benzyldimethylamine.

4,336,403

PREPARATION OF METHYL METHACRYLATE BY REACTION OF METHYL PROPIONATE AND METHANOL

Franz Merger, Frankenthal, and Gerd Fouquet, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,284

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004467

Int. Cl.[3] C07C *67/343*

U.S. Cl. 560—211 2 Claims

1. A process for the preparation of methyl methacrylate from methyl propionate and methanol at 200°–550° C. in the presence of a catalyst, wherein the reaction is carried out over a catalyst mixture consisting of an oxide catalyst containing copper, zinc and tellurium in the atomic ratio of 1:0.01–0.5:0.0-01–0.3 and of silicon dioxide modified with potassium.

4,336,404

1-ACYLOXY-15-DEOXY-16-HYDROXY-ANALOGS OF PROSTAGLANDIN E_1

William G. Biddlecom; Harold C. Kluender, and Warren D. Woessner, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

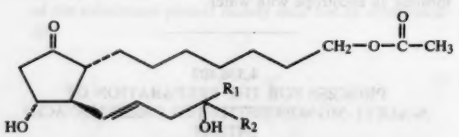
Continuation of Ser. No. 38,640, May 14, 1979, abandoned. This application May 29, 1980, Ser. No. 154,384

The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.

Int. Cl.[3] C07C *69/18*

U.S. Cl. 560—231 4 Claims

1. 1-acyloxy-15-deoxy-16-hydroxy-prostaglandin E_1 analogs characterized by the formula:



wherein R_1 is H or methyl and R_2 is $C(CH_3)_2(CH_2)_2CH_3$ or $(CH_2)_3CH_3$ provided that when R_1 is methyl, R_2 is $(CH_2)_3CH_3$ and when R_1 is H, R_2 is $C(CH_3)_2(CH_2)_2CH_3$.

4,336,405

SILVER HALIDE DEVELOPING AGENTS

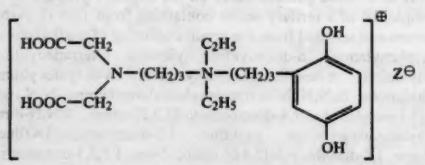
Elbert M. Idelson, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 89,556, Oct. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 1,447, Jan. 8, 1979, abandoned. This application Jul. 11, 1980, Ser. No. 168,641

Int. Cl.[3] C07C *101/72*; G03C *5/30*

U.S. Cl. 562—448 2 Claims

1. A compound which is represented by the formula



wherein Z is an anion.

4,336,406

POLYOL EXTRACTION BY HIGH BOILING ALKANES

John L. Gerlock, Dearborn; Jacob Braslaw, Southfield, both of Mich., and William E. Stevens, Long Valley, N.J., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 24, 1981, Ser. No. 237,568

Int. Cl.[3] C07C *41/01*

U.S. Cl. 568—621 25 Claims

1. A process for recovery of substantially pure polyether polyol from polyether polyurethane foam which can be used to make high quality new foam, comprising the steps of:

(a) forming a solution by dissolving said polyether polyurethane foam in a saturated alcohol having a boiling point of between about 225° C. and about 280° C. at a temperature between about 185° C. and about 220° C. under a non-oxidizing atmosphere;

(b) refluxing said solution under said non-oxidizing atmosphere in the presence of an alkali metal hydroxide catalyst and water, said water being included in said solution in an amount sufficient to create a mixture which has a boiling point within the temperature range of from about 175° C. to about 220° C., for a time necessary to substantially hydrolyze dissolution products subject to hydrolysis into amines and alcohol while (1) periodically adding a sufficient amount of water to maintain a mixture having a boiling point within said range of from about 175° C. to about 220° C. and (2) maintaining said solution at a temperature in said range, and wherein said alkali metal hydroxide catalyst is included in said solution in an amount of at least 0.1 weight percent based on the weight of said polyurethane foam;

(c) removing water remaining after hydrolysis from said solution under a non-oxidizing atmosphere;

(d) extracting said polyol from the hydrolyzed solution under a non-oxidizing atmosphere with an alkane substantially immiscible with said alcohol and having a boiling point between about 230° C. and about 300° C.; and

(e) subjecting the extracted polyol to vacuum purification at a temperature below about 230° C. so as to allow recovery therefrom of substantially pure polyether polyol.

4,336,407

CATALYTIC DISTILLATION PROCESS

Lawrence A. Smith, Jr., Bellaire, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Continuation-in-part of Ser. No. 124,433, Feb. 25, 1980, which is a division of Ser. No. 13,559, Feb. 21, 1979, Pat. No. 4,232,177. This application Feb. 17, 1981, Ser. No. 234,653

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.[3] C07C *41/06*

U.S. Cl. 568—697 48 Claims

1. A process for reacting C_4 and C_5 olefins with C_1 to C_6 alcohols to produce the corresponding ethers comprising

(a) feeding a stream containing C_4 to C_5 olefins or a mixture thereof to a distillation column reactor into a feed zone,

(b) feeding alcohol having one to six carbon atoms or mixtures thereof in said feed zone,

(c) concurrently:

(1) contacting said stream containing said olefins and said alcohol with a fixed bed acidic cation exchange resin packing in a distillation reaction zone thereby catalytically reacting at least a portion of said olefins and said alcohol to form an ether product and

(2) fractionating the resultant ether product from unreacted materials,

(d) withdrawing the ether from the distillation column reactor at a point below said feed zone, and

(e) withdrawing unreacted materials from the distillation column reactor at a point above said feed zone.

4,336,408

2-HYDROXYMETHYL-1,3-PROPANEDIOL PREPARATION

Michael W. Barnes, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 854,946, Nov. 25, 1977, abandoned. This application Jun. 26, 1979, Ser. No. 52,155

Int. Cl.[3] C07C *31/22, 29/14*

U.S. Cl. 568—853 6 Claims

1. A process for the preparation of 2-hydroxymethyl-1, 3-propanediol which comprises the treatment of bis-(hydroxymethyl) acetaldehyde with an aldehyde carbonyl group reducing agent selected from hydrogen adsorbed on a hydrogenation catalyst or an alkali metal dissolving in a lower alkanol.

4,336,409

PROCESS FOR PRODUCING CONJUGATED DIOLEFINS

Haruhisa Yamamoto, and Shinji Matumoto, both of Takaoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,250

Claims priority, application Japan, Apr. 22, 1980, 55/53424

Int. Cl.[3] C07C *5/48*

U.S. Cl. 585—622 5 Claims

1. In a process for producing a conjugated diolefin which comprises oxidatively dehydrogenating a monolefin having at least 4 carbon atoms in the vapor phase with molecular oxygen to form the corresponding conjugated diolefin; the improvement wherein the oxidative dehydrogenation is carried out in the presence of a catalyst having the general composition formula

$$Mo_aBi_bCr_cNi_dX_eY_fO_g$$

wherein X represents at least one element selected from Li, Na, K, Rb, Cs, Tl and P, Y represents at least one element selected from metal elements of Group II of the periodic table, and a, b, c, d, e, f and g respectively represent the number of Mo, Bi, Cr, Ni, X, Y and O atoms, and when a=12, b=0.05–20, c=0.05–20, d=0.1–30, e=0.01–10, f=0.01–20, and g is the number of oxygen atoms which satisfies the atomic valences of the other elements.

4,336,410

PROCESS FOR ABSORPTIVE SEPARATION OF CYCLOHEXENE

Tsuneyuki Kondo, Nagoya, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,548

Claims priority, application Japan, Apr. 7, 1980, 55/44573

Int. Cl.[3] C07C *7/12;* C10G *25/00, 25/02*

U.S. Cl. 585—827 8 Claims

1. An improvement in a process for separating cyclohexene from a mixture containing as main components benzene, cyclohexene and cyclohexane wherein said mixture is brought into contact with a type X aluminosilicate zeolite as an adsorbent whereby cyclohexene is selectively adsorbed thereon, and then, cyclohexene is desorbed therefrom, said improvement comprising using as an adsorbent a type X aluminosilicate zeolite which has been ion-exchanged with a silver ion.

the presence of a catalyst having the general composition formula

[illegible]

wherein X represents a [illegible] element selected from Li, Na, K, Rb, Cs, Tl and [illegible]; Y represents [illegible] elements selected from [illegible] elements [illegible] and a, b, c, d, e and f [illegible] represent [illegible] the numbers of [illegible] atoms and when a = [illegible] and g is the number of oxygen atoms which satisfies the atomic valences of the other elements.

4,336,[illegible]

[illegible]

[illegible], Nagoya, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Apr. [illegible], 1981, Ser. No. 2[illegible]

Claims priority, application Japan, Apr. [illegible], 1980, 55-[illegible]

Int. Cl.[illegible]

U.S. Cl. [illegible] 6 Claims

1. [illegible]

[illegible]

4,335,[illegible]

2-AMINO-[illegible]-1,3-[illegible] PREPARATION

Michael W. Harris, Brighton, [illegible], Utah, assignor to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. [illegible], [illegible], 1977, abandoned. This application Jan. [illegible], 1979, Ser. No. [illegible]

Int. Cl.[illegible]

U.S. Cl. [illegible] [illegible] Claims

1. A process for the preparation of [illegible] [illegible]

4,335,[illegible]

PROCESS FOR PRODUCING [illegible]

[illegible] and [illegible], both of [illegible], Japan, assignors to [illegible] Co., Ltd., [illegible], Japan

Filed Apr. [illegible], 1980, Ser. No. [illegible]

Claims priority, application Japan, Apr. [illegible], 1979, 54-[illegible]

Int. Cl.[illegible]

U.S. Cl. [illegible] 3 Claims

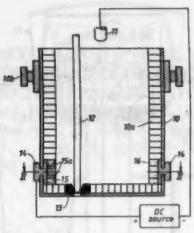
1. In a process for producing [illegible]

[illegible]

4,336,411
MOLTEN METAL HEATING, STIRRING AND CASTING APPARATUS

Bertil Hanas, and Sven-Einar Stenkvist, both of Västeros, Sweden, assignors to ASEA Aktibolag, Västeros, Sweden

Filed Feb. 24, 1981, Ser. No. 237,599
Claims priority, application Sweden, Mar. 10, 1980, 8001838
Int. Cl.³ H05B *7/00*
U.S. Cl. 373—85 **5 Claims**

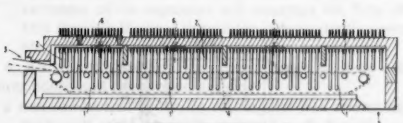


1. A metal heating, stirring and casting apparatus comprising a ladle having bottom and side walls and refractory lining covering the insides of said walls for containing the molten metal, a valved casting nozzle in said bottom wall, an electric contact in said side wall at a position offset from said nozzle and adjacent to said bottom wall so as to be contacted by the molten metal when in said ladle, an arcing electrode positioned above said ladle so as to form an arc with the molten metal when in the ladle, and means for connecting said contact and electrode with DC for powering said arc.

4,336,412
HEAT TREATMENT FURNACE

Ture Thomander, Hallstahammar, Sweden, assignor to Bulten-Kanthal AB, Hallstahammar, Sweden

Continuation of Ser. No. 917,751, Jun. 21, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,576
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756402
Int. Cl.³ F27B *5/04, 9/04;* **H05B** *3/12*
U.S. Cl. 373—110 **5 Claims**

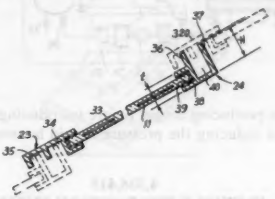


1. Heat treatment furnace comprising
(a) a housing having a feed zone therein;
(b) a plurality of electrical heating elements at least some of which are positioned in said feed zone;
(c) means for introducing into said furnace a nonoxidizing atmosphere at maximally about 1050° C.;
(d) at least those heating elements which are positioned in said feed zone comprising electrical resistance elements of substantially poreless material principally comprising molybdenum disilicide; and
(e) said resistance elements being free of any protective coating in order to place them in unobstructed contact with said non-oxidizing atmosphere.

4,336,413
SOLAR PANELS

Michel Tourneux, Velizy Villacoublay, France, assignor to R.T.C. La Radiotechnique Compelec, Suresnes, France

Filed Sep. 8, 1980, Ser. No. 185,255
Claims priority, application France, Sep. 10, 1979, 79 22596
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—251 **6 Claims**



1. A photovoltaic generating panel of generally quadrangular shape having a multiple number of semiconductor solar cells inside a laminate for immobilizing and protecting said cells and connecting means on the periphery of said laminate partially overlapping several identical panels to assure waterproofing by direct laying of said panels on the frame of a sloping roof, said connecting means comprising:
first and second frame pieces fastened on opposite edges of said laminate pointed in the direction of the pitch of the roof and having identical sections including a U-shaped portion fitted side ways on opposite edges of a said laminate, an extension of one side of the branches of said U, and at least one wing perpendicular to said extension having a height less than the thickness of said U-shaped portion, said extension and wing forming at least one sealing groove, said sealing grooves of said first and second pieces pointing in opposite directions;
a third frame piece fastened on the bottom edge of said laminate pointed level with the roof and having a section identical to that of said first and second frame pieces, the sealing groove of said third frame piece directed to emerge opposite the exposed face of said panel; and a fourth frame piece fastened on the top edge of said laminate pointed level with the roof and having a section including a U-shaped portion similar to that of said first three framed pieces and at least one sealing wing having a height which is greater than the thickness of said U-shaped portion and less than double the thickness of said U-shaped portion, and said wing being directed to emerge toward the exposed face of the panel.

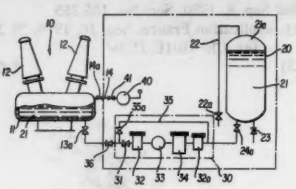
4,336,414
METHOD AND APPARATUS FOR TREATING NOXIOUS GASES

Toshio Suzuki, Tokyo; Junichi Ise, Yokohama; Satoru Yanabu, Machida, and Hitoshi Mizoguchi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1980, Ser. No. 189,712
Claims priority, application Japan, Sep. 21, 1979, 54/120739; Oct. 11, 1979, 54/129955
Int. Cl.³ H01B *17/36;* **B03C** *3/70*
U.S. Cl. 174—14 R **12 Claims**

11. A process for treating noxious gases and substances which are produced in a gas-insulated electrical housing by virtue of an electric arc due to corona discharge during a switching operation, comprising introducing a cleaning solution including a volatile solvent into the gas-insulated electrical housing, utilizing said solution to wash the contaminants resulting from said corona discharge within the apparatus, ren-

dering the solution harmless by removing said contaminants, collecting the solution, and applying a vacuum to said housing



by vacuum producing means before introducing said cleaning solution for reducing the pressure in said housing.

4,336,415

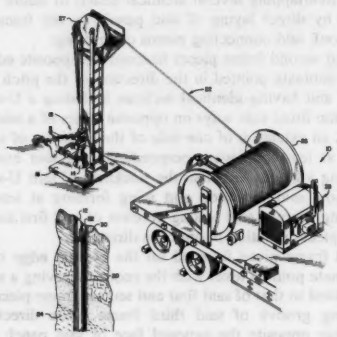
FLEXIBLE PRODUCTION TUBING

John B. Walling, 5613 Trail Lake Dr., Fort Worth, Tex. 76133

Continuation-in-part of Ser. No. 150,615, May 16, 1980. This application Jul. 21, 1980, Ser. No. 170,610

Int. Cl.³ F16L *11/12*

U.S. Cl. 174—47 **2 Claims**



1. Flexible production tubing comprising, in combination:

a protective, high tensile strength tubular sheath;

a relatively large diameter core tube extending along an undulating path through said protective sheath; and,

a complementary injection body of load-bearing filler material disposed in the annulus intermediate said undulating core tube and said protective sheath, said core tube being at least partially embedded within the injection body, said injection body yieldably supporting said core tube along said undulating path.

4,336,416

FIRE-RATED FEED-THROUGH FITTING FOR TRANSFERRING INSULATED WIRES THROUGH A CONCRETE FLOOR

John P. Goodsell, Stratford, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jun. 15, 1979, Ser. No. 48,703

Int. Cl.³ H02G *3/22*

U.S. Cl. 174—48 **42 Claims**

41. A feed-through floor fitting comprising;

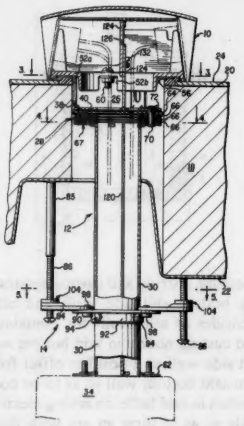
first and second flanges having respective first and second opposing surface portions mounted in opposed, spaced-apart relationship;

a member composed at least in part of an intumescent material positioned between said surface portions, said member having an aperture extending therethrough for receiving electrical conductor means insertable in said aperture, the wall of the aperture being formed by the intumescent material;

each of said flanges having an opening extending therethrough communicating with a different end of the aperture in the intumescent member;

a conduit having a first and a second end;

means mounting the first end of said conduit on one of said flanges in substantial alignment with the corresponding



flange opening, said flanges being spaced-apart at opposite ends of the aperture;

the aperture being devoid of any body with the exception of the electrical conductor means inserted into said aperture, (1) having good thermal conductivity and extending at least the length of the aperture between said flanges, or (2) which prevents intumescing of the material of said member from closing said aperture.

4,336,417

COVER ASSEMBLIES FOR ELECTRICAL APPARATUS

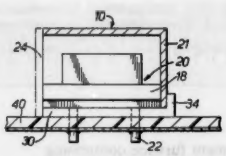
David J. Hickling, Beeston, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jul. 7, 1980, Ser. No. 166,328

Claims priority, application United Kingdom, Jul. 10, 1979, 7924065

Int. Cl.³ H05K *5/03*

U.S. Cl. 174—52 R **5 Claims**



1. A cover assembly covering an electrical apparatus in a permanently secure manner, said electrical apparatus being of the kind having projecting pins in engagement with holes formed in a mounting surface, said cover assembly comprising a cover member having flange means accepting said electrical apparatus to secure said electrical apparatus inside said cover member, said cover member having an end wall contacting said electrical apparatus, a mounting member comprising a pad having holes accepting said projecting pins of said electrical apparatus, said mounting member also comprising a projection secured to said pad, said projection engaging the outside sur-

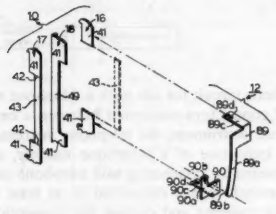
face of said end wall, whereby to prevent the removal of said cover from said electrical apparatus.

4,336,418

LAMINATED JUNCTION BOX MODULE AND LAMINATED PLUG-IN ACCESSORY MODULES SELECTIVELY USABLE THEREWITH

Richard L. Hoag, 18663 - 26 Mile Rd., Albion, Mich. 49224

Filed Nov. 25, 1980, Ser. No. 210,163
Int. Cl.³ H02G 3/18
U.S. Cl. 174—53 6 Claims



5. An electrical outlet structure adapted to have external wires connected thereto, comprising

a non-conductive generally rectangular box consisting of a back wall with side and end walls forming a front opening;

laterally spaced and longitudinally extending hot, neutral and ground bus bars in said box, each of said bus bars having a coupler for said wires on each of its opposite ends, and at least said hot and neutral bars being disposed in said box with its intermediate segment spanning said opening;

a pair of outlet sockets in said housing, the first of said sockets being connectable between the ends of said hot and neutral bars at one end of the housing and the second of said sockets being connectable between the opposite ends of said last-named bars, and

means for detachably securing said intermediate segments to said hot and neutral bus bars, respectively, whereby detachment of the segments will interrupt the flow of current through the bars to provide independently controllable first and second sockets.

6. An electrical wiring structure adapted to have external wires connected thereto, comprising

a non-conductive generally rectangular box consisting of a back wall with side walls and end walls forming a front opening;

laterally spaced and longitudinally extending hot, neutral and ground bus bars in said box, each of said bus bars having a coupler for said wires on each of its opposite ends, and at least said hot bar being disposed in said box with its intermediate segment spanning said opening;

a non-conductive rectangular housing telescopically mounted in said opening;

a switch mounted in said housing and connectable between the opposite ends of said hot bus bar, and

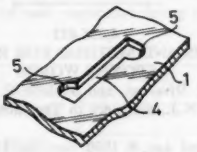
means for detachably securing said intermediate segment to said hot bus bar whereby detachment of the segment will interrupt the flow of current through the bar and divert it to said connectable switch.

4,336,419

CONSTRUCTION FOR MOUNTING PLATE-LIKE ELECTRIC PARTS

Yoichi Wakayama, and Tadao Kikuchi, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 167,754
Claims priority, application Japan, Jul. 14, 1979, 54-97237[U]
Int. Cl.³ H05K 1/18
U.S. Cl. 174—68.5 3 Claims



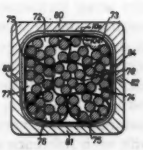
1. A construction for mounting plate-like electric parts having exposed leads extending along opposite sides thereof to a substrate, comprising: a substrate having electrically conductive patterns on one surface thereof and at least one elongated insertion hole extending through said substrate; a respective plate-like electric part adapted to be inserted in each said insertion hole with its exposed leads held by the edge portions of the respective hole and adapted to be soldered to an electrically conductive pattern; and means including holes formed contiguous with said insertion holes but separated from said exposed leads for allowing escape of any gases formed during soldering of said electric part to the conductive pattern.

4,336,420

SUPERCONDUCTING CABLE

Hans Benz, Zurich, Switzerland, assignor to BBC, Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 17, 1980, Ser. No. 141,253
Claims priority, application Switzerland, Jun. 5, 1979, 5183/79
Int. Cl.³ H01B 5/08
U.S. Cl. 174—128 S 17 Claims



1. A super-conducting cable comprising:

a plurality of wires combined in groups to form plural wire bundles, said plural wire bundles combined in groups to form plural ropes, and said plural ropes being combined; and

a vacuum tight casing enclosing said plural combined ropes;

said wires in each of said bundles having plural mutual wire contact sites, said bundles in each of said ropes having

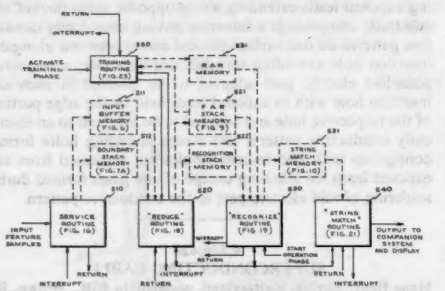
plural mutual bundle contact sites, and said ropes enclosed in said casing having plural mutual rope contact sites;

wherein there is provided a substantially homogeneous metal-to-metal connection at said wire contact sites, said bundle contact sites and said rope contact sites, said wire bundles including a stabilizing material having contact sites connected to wires adjacent thereto by means of a substantially homogeneous metal-to-metal connection at the respective contact sites.

4,336,421
APPARATUS AND METHOD FOR RECOGNIZING SPOKEN WORDS

John R. Welch, Riverton, and Sheldon C. Oxenberg, Cherry Hill, both of N.J., assignors to Threshold Technology, Inc., Delran, N.J.

Filed Apr. 8, 1980, Ser. No. 138,643
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **38 Claims**



1. Apparatus for receiving input spoken vocabulary words during a training phase of operation and for subsequently recognizing strings of received input spoken command words, comprising:

feature extraction means for generating digital feature signals dependent on the features present in input words;

reference array formation means for forming and storing, for each vocabulary word, a time-dependent reference array dependent on the feature signals present during the vocabulary word as spoken during the training phase;

boundary detection means for detecting relatively long duration pauses between speech sounds as inter-string pauses from which string boundaries are determined, the string boundaries defining the beginning and end of a string of words, and for detecting relatively short duration pauses between speech sounds as inter-segment pauses from which speech segment boundaries are determined within a string of words;

candidate feature array formation means for forming and storing, for each command word candidate consisting of each segment and each sequence of up to a predetermined number of segments, a time-dependent candidate feature array dependent upon the feature signals present during said command word candidate;

array correlation means for comparing each candidate feature array with each reference array and for storing, for each command word candidate, the vocabulary word whose reference array results in the highest correlation and a record of the score of said highest correlation;

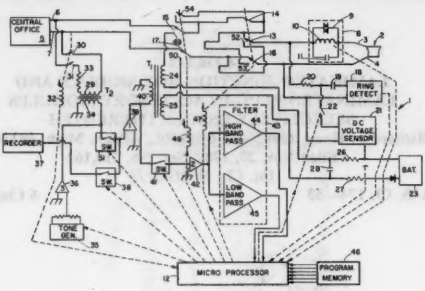
string matching means responsive to the stored correlation scores for determining the sequence of vocabulary words that yields the highest overall correlation score for the string; and

means for generating output indications of the determined sequence of vocabulary words.

4,336,422
TOLL RESTRICTOR

Regis B. Mellon, Mulberry, Fla., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 922,126, Jul. 5, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,341
Int. Cl.³ H04M *1/66*
U.S. Cl. 179—18 DA **8 Claims**



1. A telephone circuit for use with a telephone system having a pair of conductors connected between a central office and a telephone instrument, the telephone instrument providing a signal indicative of a telephone number, said circuit comprising: means for connecting said telephone circuit to the conductors; switch means connected to at least one of the conductors for opening and closing the connection between the central office and the instrument; said switch means being closed when dialing signals are generated from the central office but not from the instrument; means for continuously analyzing said signal from the telephone instrument for permitting or denying a telephone call; said switch means being open during the analyzing of said signal from the telephone instrument; a hold circuit connected to said pair of conductors; means for connecting the instrument to an energy source separate from the central office energy source during analyzing of said signals from the instrument; whereby separate circuits are provided for powering the telephone instrument and for holding the connection to the central office for maintaining loop current during such analyzing; means for regenerating a signal which approximates said analyzed signal from the telephone instrument; said means for regenerating being connected to said means for analyzing and to the pair of conductors; said means for regenerating providing a signal to the central office in response to said means for analyzing having permitted a telephone call; said switch means being closed in response to said means for analyzing having permitted a telephone call.

4,336,423
DEVICE FOR INCREASING THE PARALLEL INDUCTANCE OF A TRANSFORMER

Emile Morlec, Cros de Cagnes; Daniel Reynes, Villeneuve Loubet, and Jean-Pierre Suzzoni, Cros de Cagnes, all of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,573
Claims priority, application France, Jul. 20, 1979, 79 19131
Int. Cl.³ H04B *3/30, 3/36;* H04Q *3/52*
U.S. Cl. 179—18 GF **10 Claims**

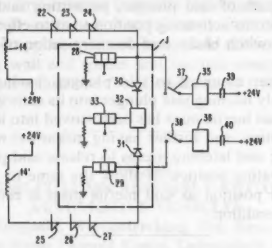
1. A telephone switching network for selectively connecting a plurality of telephone lines, said network including means to compensate for serial and parallel losses, comprising:

a plurality of transformers having primary and secondary windings, said primary windings being respectively connected to said telephone lines, and said secondary windings each having a first terminal connected to a first voltage source,

a plurality of matrices having semiconductor crosspoint switches arranged and interconnected to form said network, and to define a plurality of network inputs,

a plurality of network outputs and a plurality of selectively controllable half voice paths between said inputs and said outputs, said inputs being respectively connected to second terminals of said transformer secondary windings,

a plurality of controllable two-terminal junctors, said outputs being connected, in pairs, to the respective two terminals of said junctors, a first terminal of any given junctor being also connected to a second voltage source through a first switch and to a first terminal of a first diode, with the potential difference between said first voltage source and said junctor first terminal being such that the semiconductor switches of a path ending at said junctor first terminal are forward biased when said first switch is closed, the second terminal of any given junctor being similarly connected to said second voltage source through a second switch and to a first terminal of a second diode, with the



potential difference between said first voltage source and said junctor second terminal being such that the semiconductor switches of a path ending at said junctor second terminal are forward biased when said second switch is closed, the second terminals of said first and second diodes being both connected to a third voltage source through two respective resistors and a single common third switch, with the potential difference between said junctor first and second terminals and said third voltage source being such that said first and second diodes are forward biased when said first, second and third switches are closed,

a negative resistance element connected between the second terminals of each couple formed by said first and second diodes of a given junctor,

and first and second negative inductance elements, the first one being connected between the first terminal of said first diode and said first voltage source, and the second one being connected between the first terminal of said second diode and said first voltage source.

4,336,424

CIRCUIT ARRANGEMENT FOR MONITORING OPERATING CONDITIONS OF DIRECT CURRENT DEVICES

Robert Lechner, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,670

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938946

Int. Cl.³ H04M *3/22*

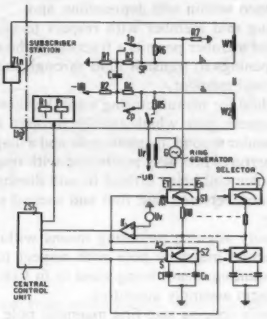
U.S. Cl. 179—18 FG **6 Claims**

1. A circuit arrangement for monitoring operating conditions of a group of direct current devices, said operating conditions represented by different potentials occurring at a sampling connector of each direct current device, said circuit arrangement comprising:

(a) a first and a second selector unit, each having parallel signal inputs, an output and a control input for receiving a control signal causing step-by-step action of the respective selector unit, the outputs of said selector units being connected, and each of said signal inputs of said first selector being connected to a respective sampling connector of one of said direct current devices;

(b) means for generating a control signal train and having an output commonly connected to said control inputs of both selector units;

(c) a plurality of filter capacitors arranged in parallel with respect to each other and being commonly connected to ground, each of said capacitors being connected to a



respective one of said signal inputs of the second selector unit;

(d) a voltage source for generating a reference voltage with respect to said potentials at said sampling connectors; and

(e) a comparator having a first input connected to said reference voltage source, a second input connected to said outputs of said selector units and an output for delivering a binary output signal evaluating the potential at the presently selected sampling connector with respect to said reference voltage.

4,336,425

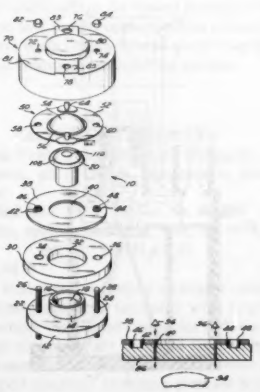
HIGH FREQUENCY COMPRESSION DRIVER AND METHOD OF MANUFACTURE THEREOF

Jonas A. Renkus, Santa Ana, Calif., assignor to Renkus-Heinz, Inc., Irvine, Calif.

Filed May 6, 1980, Ser. No. 147,180

Int. Cl.³ H04R *9/02, 9/04, 9/06, 31/00*

U.S. Cl. 179—115.5 H **19 Claims**



1. In assemblying a loud speaker, a method for contributing

to precise positioning of a voice coil between two magnetic poles comprising:

(a) providing an annular member having a large central opening and at least two smaller apertures, said member being adapted to be one of said poles;

(b) positioning a bushing within each of said apertures;

(c) providing a fixture having depressions spaced to receive said bushings and having a plurality of small openings arranged in a circle in the central area of said fixture;

(d) providing a source of light beneath said fixture;

(e) placing said member on said fixture with the bushings positioned within said depressions; and

(f) aligning said member with respect to said fixture such that said member permits a fraction of the area of each of said openings to transmit light through the central opening in said member.

2. A method for manufacturing a speaker having a cylindrical first magnetic pole which extends through a central opening in an annular second magnetic pole and a diaphragm assembly with apertures precisely positioned with respect to a voice coil, said voice coil being affixed to said diaphragm assembly and positioned between said first and second magnetic poles comprising:

(a) precisely aligning mounting means within apertures in said second magnetic pole with respect to said opening said mounting means being sized to fit tightly within said diaphragm assembly apertures;

(b) precisely spacing said first magnetic pole from said second magnetic pole; and

(c) placing said apertures in said diaphragm assembly over said mounting means to precisely position said voice coil between said first and second magnetic poles.

15. A loud speaker assembly comprising:

(a) first and second magnetizable materials spaceably mounted from one another;

(b) a magnet which polarizes said materials;

(c) a stud extending through said assembly, said stud extending through an aperture in said second material;

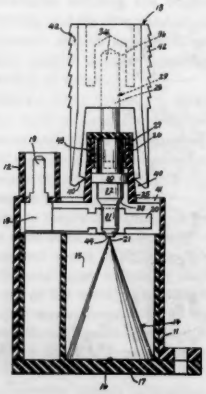
(d) an adhesive positioned between said stud and said second material aperture to prevent said second material from shifting relative to said first material.

4,336,426

INERTIA SWITCH

Walter L. Cherry, Winnetka, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Sep. 5, 1980, Ser. No. 184,473
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—615 **10 Claims**



1. An inertia switch comprising:

(a) a hollow housing providing an internal circular compartment,

(b) a switch plunger having a first and a second end, movable within said housing,

(c) means normally urging said plunger for movement in one direction within said housing from a retained position into an activating position,

(d) an electric switch within said housing and having a pair of switch blades normally biased into contact with each other with said switch blades disposed in the path of movement of said first end of said plunger,

(e) an inertia mass within said housing which, when in its stable condition, is in contact with said first end of said plunger for resisting movement of said plunger in one direction within said housing and for maintaining it in its retained position,

(f) said inertia mass responsive uniformly to any impact force upon said housing in any direction through the horizontal plane for unstabilizing said inertia mass and moving it out of the path of said plunger, permitting said plunger to move into its activating position so as to effect separation of said switch blades and de-energization of said switch, and

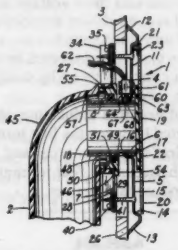
(g) a carrier mounted to said plunger, having means for releasably latching said plunger into its activating position when said inertia mass has been moved into its unstabilizing position, and further having means for manually unlatching said latching means to release said plunger from its activating position to allow the same to return to its retained position as said inertia mass is returned to its stable condition.

4,336,427

OUTLET ASSEMBLY FOR A VACUUM CLEANING SYSTEM

Winston S. Lindsay, Ponca City, Okla., assignor to Vacu-Maid, Inc., Ponca City, Okla.

Filed Oct. 3, 1980, Ser. No. 193,825
Int. Cl.³ H01H *27/06*
U.S. Cl. 200—61.6 **9 Claims**



9. An outlet assembly for a vacuum cleaning system and comprising:

(a) a face plate having a central aperture and adapted to be positioned against an exterior surface of a building wall, said face plate having a cover swingably mounted thereto and biasing means urging said cover to a closed position, said cover having a sealing surface;

(b) an annular inlet bushing having an outer surface and a through bore and extending through said building wall and having one open end situated to the interior of said building wall and a second open end normally closed and sealed by the cover of said face plate;

(c) a back plate with inner rim portions defining a central aperture, opposite surfaces and opposite sides with spaced flange portions extending generally perpendicularly from said sides and from one of said surfaces, said inlet bushing extending through said central aperture of said back plate;

(d) a vacuum conduit having a elbow portion and terminat-

ing in an open end adjacent said back plate and in alignment with the open end of said inlet bushing; and

(e) an annular seal fitting member engaging said back plate and sleeved about said inlet bushing, said seal fitting member having an annular inner grooved portion with a plurality of alternating recesses and spaced finger portions defining a seal seat and a resilient O-ring seal received therein and engaging the outer surface of said inlet bushing in air-tight relationship, an annular end wall portion providing a stop against inner rim portions defining the central aperture of said back plate and an annular flange portion snugly received within the open end of said vacuum conduit and securing said vacuum conduit to said inlet bushing in air-tight relationship;

(f) said back plate being removably fastened to said face plate and being reversible to face either of said opposite surfaces toward the building wall whereby, when said flange portion is directed toward said building wall, said flange portions space said back plate and said vacuum conduit a first distance from said building wall and, when said flange portion is directed away from said building wall, the opposite of said back plate surfaces abuts said building wall and spaces said vacuum conduit a second distance less than said first distance away from said building wall.

4,336,428

STEERING COLUMN ASSEMBLY SWITCH FOR AUTOMOTIVE VEHICLES

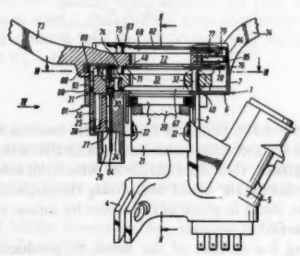
Werner E. Berginski, Werdohleveking, Fed. Rep. of Germany, assignor to Firma Leopold Kostal, Ludenscheid, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,335

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828592

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—61.54 **12 Claims**



1. A steering column assembly switch comprising:

an integral housing defining a supporting sleeve and an annular chamber configured to surround the steering column of a vehicle;

said annular chamber having a bottom wall provided with sockets extending downwardly from said chamber;

a separate annular partition of insulating material in said annular chamber and dividing the same into upper and lower chambers, said annular partition being a printed circuit board having conductor bars and switch contacts on opposite faces thereof exposed to said upper and lower chambers, respectively;

an annular rotatable and tiltable contact member in each of said chambers having contact means selectively engageable with said switch contacts;

said conductor bars having portions extending axially of said annular chamber into said sockets for connection to external electric circuits.

4,336,429

SWITCH UNIT

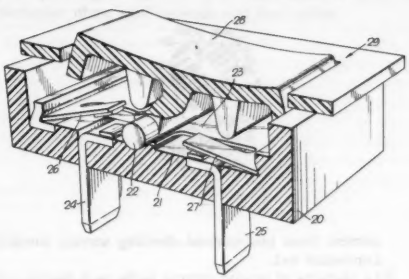
Thomas M. Jackson, Bishops Stortford; Robert J. Hodges, Cheshunt, and Stephen L. Amphlett, Bishops Stortford, all of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,622

Claims priority, application United Kingdom, Oct. 16, 1979, 7935896

Int. Cl.³ H01H *5/18*

U.S. Cl. 200—67 DB **1 Claim**



1. An electrical snap-action switch, which includes a strip of a springy material held captive in a frame such that the strip is bowed, a rod extending across the frame at right-angles to the length of the strip and located between the ends of the frame, a supporting surface adjacent to the strip and on the opposite side thereof from the rod, which surface extends between the points of the frame at which the strip is held captive and is generally parallel to the length of the strip, the rod bearing on the strip so as to constrain it into a position wherein the portion thereof between one end of the frame and the rod is bowed away from the supporting surface while the portion thereof between the rod and the other end of the frame lies along a substantial portion of the supporting surface, an operating element adjacent to the strip and on the opposite side thereof from the supporting surface, which element when operated depresses the bowed portion of the strip to cause that strip to snap to a position in which its bowed portion lies along the supporting surface while its other portion is bowed away from the surface, the rod thus providing a pivot for the strip, and contact means so located on the supporting surface as the co-operate with further contact means controlled by the movement of the springy strip between its non-operated and its operated positions, wherein said further contact means is carried by a portion of material controlled by the springy strip but separate from or additional to the bowed portion of the springy strip and wherein said further contact means in response to said operating element is alternately bowed away from the supporting surface or lies along the supporting surface.

4,336,430

VACUUM INTERRUPTER

Yukio Kurosawa; Yukio Kawakubo, both of Hitachi, and Nobuo Abe, Tokaimura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,386

Claims priority, application Japan, Nov. 22, 1978, 53-143392

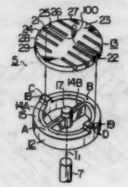
Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **14 Claims**

1. A vacuum interrupter including a vacuum vessel, a pair of electrode assemblies arranged separably with respect to each other in said vacuum vessel, and conductor rods on which said pair of electrode assemblies are mounted respectively, each of said electrode assemblies including a coil electrode and a main electrode, said coil electrode including arms for branching the current flowing in said conductor rod to a plurality of different

radial directions with respect to said conductor rod, said coil electrode further including a current dividing section for branching the current flowing in each of said arms in different circumferential directions with respect to said conductor rod thereby generating axial magnetic fields in different directions, said main electrode being electrically connected to said current dividing section, wherein said main electrode comprises at least two main electrode sections, each of said main electrode sections including:

(a) a first current path with an end thereof electrically connected to said current dividing section for passing the



current from said current dividing section toward said conductor rod,

(b) a plurality of second current paths each having one end thereof connected to said first current path for branching the current in said first current path from said conductor rod side toward said current dividing section side, and

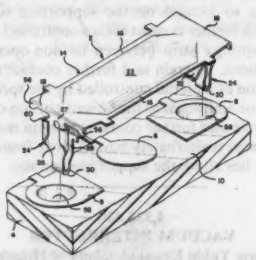
(c) a plurality of third current paths each having one end thereof connected to said associated second current path for passing the current in said associated second current path to the direction in parallel and opposite to the current in said first current path.

4,336,431

SOLDERLESS CIRCUIT BOARD CONTACT

Winfield W. Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 10, 1980, Ser. No. 195,810
Int. Cl.³ H01H *1/14, 3/12*
U.S. Cl. 200—292 **9 Claims**



1. A platelike spring metal contact spring mounted on one surface of a circuit board and normally spaced from a first conductor on said one surface of said circuit board, said contact member having a pair of mounting legs extending into openings in said circuit board, at least one of said mounting legs being electrically connected to a second conductor in said circuit board whereby upon resilient movement of portions of said platelike member towards said circuit board, said platelike member contacts said first conductor, and a circuit path is established from said first conductor to said second conductor, said contact member being characterized in that:

each of said mounting legs comprises an elongated strip, said strip having a first straight portion which is integral at one end with, and which extends from, said platelike member, an intermediate bight portion, a second straight portion, and a free end spring portion,

said first and second straight portions being in the associated opening in said circuit board, said first and second straight portions of each of said legs having opposed bosses thereon, said bosses being against each other and urging said first and second straight portions of said legs against the walls of said openings,

said intermediate bight portion being located proximate to the other surface of said circuit board, said intermediate bight portion having deformed portions which extend laterally of said first and second straight portions,

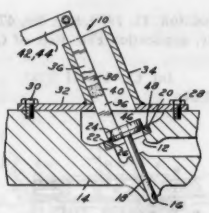
said free end spring portion extending from said second straight portion laterally across said one surface of said circuit board and inwardly with respect to said platelike metal contact member, said free end spring portion being beneath said platelike metal contact member and having a contact portion which is against said second conductor.

4,336,432

INDUCTION HARDENING OF VALVE SEAT INSERTS

Benjamin T. Bajorek, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 19, 1980, Ser. No. 188,448
Int. Cl.³ H05B *6/38;* C21D *1/10*
U.S. Cl. 219—10.41 **9 Claims**



1. A method for joining a metal insert located in a recess formed in a second component having a coefficient of thermal expansion greater than the metal from which the insert is made and for hardening the insert comprising the steps of:

fitting the insert in place in the recess by means of an interference fit;

machining the surface of the insert to produce a seating surface thereon;

locating an induction heater adjacent the surface of the insert to be hardened, the heating element of the induction heater being spaced from the surface of the insert; and

energizing the heating element from a high frequency alternating current electrical energy source for a period lasting between 0.20–0.60 seconds.

4,336,433

HEATING CONTROL APPARATUS FOR COOKING OVEN WITH VAPOR SENSOR

Seiki Yokozeki, Yamatokoriyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 1980, Ser. No. 168,338
Claims priority, application Japan, Jul. 11, 1979, 54-88584
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **2 Claims**

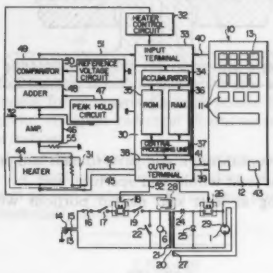
1. A heating control apparatus for a microwave oven wherein an object to be cooked is placed in a heating chamber

and heated by microwave energy radiated from a microwave generator, said heating control apparatus comprising:

a vapor sensor for sensing a change in the vapor content of air exhausted from said heating chamber;

counting means for determining the period of time T_1 from the instant that heating is started to the detection by said vapor sensor of a rapid increase in said vapor content thereby indicating the generation of vapor from said cooking object, said counted time period T_1 being proportional to the weight of said cooking object;

means for storing a plurality of constants for each of a plurality of predetermined kinds of cooking objects and for each



of a plurality of said counted time periods T_1, said constants being functions of the weights of said cooking objects and therefore of the counted time periods T_1 for specific kinds of cooking objects;

means for selecting a value K of said constant corresponding to the kind of cooking object and to said time period T_1;

means for determining a further heating time period T_2 by multiplying said time period T_1 by said selected constant value K; and

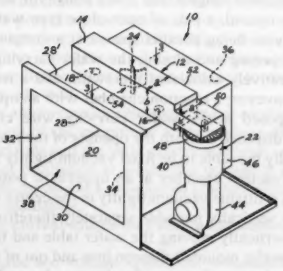
means for terminating the operation of said microwave generator after a total heating time consisting of the sum of said counted time period T_1 and said further heating period T_2, where $T_2 = KT_1$.

4,336,434

MICROWAVE OVEN CAVITY EXCITATION SYSTEM EMPLOYING CIRCULARLY POLARIZED BEAM STEERING FOR UNIFORMITY OF ENERGY DISTRIBUTION AND IMPROVED IMPEDANCE MATCHING

Matthew S. Miller, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 15, 1980, Ser. No. 178,324
Int. Cl.³ H05B *6/72*
U.S. Cl. 219—10.55 F **14 Claims**



1. An excitation system for a microwave oven cooking cavity, having electrically conductive walls said excitation system comprising:

at least a pair of feed points spaced along one wall of the cooking cavity for introducing microwave energy into the cooking cavity; and

an arrangement for providing a plurality of relative phase shifts between said feed points as a function of time;

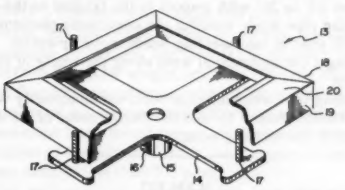
whereby the electromagnetic energy fields from said feed points combine in said cavity to produce a concentrated beam of energy, the direction of which depends upon the particular phase shift between said feed points.

4,336,435

MICROWAVE APPARATUS FOR HEATING LIQUID IN A CLOSED PLASTIC CONTAINER

Satish Kashyap, Kanata; John G. Dunn, Hammond; Lorne Woods, Ottawa, and Frank Vachon, Hull, all of Canada, assignors to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Mar. 23, 1981, Ser. No. 246,892
Int. Cl.³ H05B *6/80*
U.S. Cl. 219—10.55 F **13 Claims**



1. Microwave apparatus for thawing liquid frozen in a plastic bag comprising:

microwave means having a microwave cavity for receiving the plastic bag and a microwave power source for energizing the microwave cavity to thaw the frozen liquid in the bag;

holder means within the microwave cavity for retaining the plastic bag in a substantially vertical position and for shielding strategic areas of the plastic bag from microwave energy;

means fixed to the holder means within the microwave cavity for imparting a motion to plastic bag thereby agitating the thawing liquid in the plastic bag; and

temperature means for detecting the temperature of the thawing liquid in the bag and for deenergizing the cavity at a preselected temperature.

4,336,436

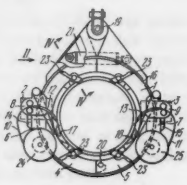
METHOD FOR WELDING GIRTH JOINTS IN PIPE LINES

Vasily Y. Dubovetsky, Bulvar Lesi Ukrainki, 2, kv. 35; Leonid N. Kopylov, ulitsa Saljutnaya, 27, kv. 44; Valentin A. Kotov, ulitsa Lenina, 88, kv. 64; Jury I. Saprykin, ulitsa Semashko, 21, kv. 34; Vladimir I. Slepchenko, ulitsa Uritskogo, 11, kv. 92; Boris E. Paton, ulitsa Chkalova, 41a, kv. 26; Igor K. Pokhodnya, ulitsa Chkalova, 41a, kv. 25; Vladimir E. Paton, ulitsa Anri Barbjusa, 22/26, kv. 64; Mikhail G. Belfor, pereulok Ivana Maryanenko, 11, kv. 28; Efim Y. Leschinsky, ulitsa Fedorova, 16, kv. 13; Andrei N. Kutovoi, ulitsa Gogolevskaya, 32, kv. 5; Mikhail R. Unigovsky, ulitsa Pushkinskaya, 21, kv. 33; Veniamin S. Rotenfeld, ulitsa Sh.Aleikhema, 1, kv. 17; Valery N. Shlepakov, ulitsa Pushkinskaya, 45, kv. 9; Jury A. Gavriljuk, ulitsa Parkhomenko, 9, kv. 36, all of Kiev; Alexandr G. Mazel, Aptekarsky pereulok, 8/2, kv. 9; Mark Z. Sheinkin, ulitsa Kedrova, 3, kv. 91, both of Moscow, and Orest M. Serafin, ulitsa Derezhabelnaya, 28, korpus 1, kv. 45, Dolgoprudny, Moskovskaya oblast, all of U.S.S.R.

Filed Jan. 29, 1979, Ser. No. 7,193

Int. Cl.[3] B23K *31/06, 9/12*

U.S. Cl. 219—61 **7 Claims**



1. A method for welding girth joints in pipe lines using several welding heads, comprising the steps of:

moving each of said welding heads around the pipe line and a respective section of the girth joint so that the welding heads are moved upwards;

feeding a welding wire to each of the welding heads so that the welding wire is fed substantially tangentially with respect to the surface of the pipe while welding the girth joint at the lower and lateral sections of the pipe line and then feeding said welding wire through the depth of the girth joint by angularly positioning said welding wire from 15° to 20° with respect to the tangent to the surface of the pipe while welding the uppermost portions of the girth joint as said welding heads move upwards;

forming a circumferential weld along the whole of the girth joint;

moulding the circumferential weld simultaneously with the formation thereof to hold the molten metal of the welding bath in the welding zone.

4,336,437

METHOD OF EXTRUSION-FUSION WELDING OF LEAD PARTS THROUGH AN APERTURE IN A BATTERY CASE

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 948,979, Oct. 5, 1978, and a continuation-in-part of Ser. No. 790,88[illegible], Apr. 26, 1977, Pat. No. 4,166,210. This application Nov. 14, 1980, Ser. No. 206,758

Int. Cl.[3] B23K *11/16*

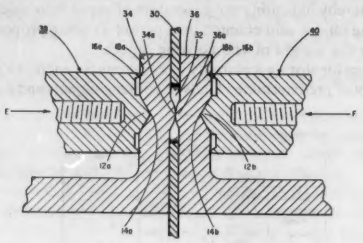
U.S. Cl. 219—78.16 **11 Claims**

1. A method of welding lead parts through an aperture in a wall of a battery case utilizing an electrode comprising at least an extruding portion for extruding portions of said parts to touch within said aperture, and a contacting portion for contacting other portions of said parts during the welding of said parts, comprising the steps of:

a. positioning said parts on opposite sides of said aperture to at least entirely overlap said aperture;

b. extruding at least a portion of said parts into said aperture at least until said contacting portion contacts a surface of said part and said extruded portions touch within said aperture;

c. limiting the degree of contact between said parts within said aperture responsive to the degree of contact between said contacting portion and said lead part;



d. passing current through said parts to melt said portions of said parts at least within said aperture; and

e. compressing at least said melted portions within said aperture.

4,336,438

APPARATUS FOR AUTOMATIC SEMI-BATCH SHEET TREATMENT OF SEMICONDUCTOR WAFERS BY PLASMA REACTION

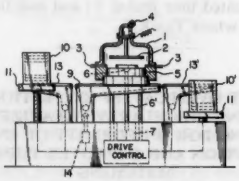
Akira Uehara, Yokohama; Hiroyuki Kiyota, Hiratsuka; Shigekazu Miyazaki, Sagamihara, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 16, 1980, Ser. No. 187,748

Claims priority, application Japan, Sep. 11, 1979, 54-124709[U]

Int. Cl.[3] B23K *9/00;* **B65H** *1/06*

U.S. Cl. 219—121 PG **7 Claims**

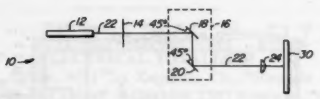


1. An apparatus for the automatic sheet by sheet semibatch treatment of a wafer by plasma reaction, which apparatus comprises wafer carrying means substantially comprising along a horizontal longitudinal axis a conveyor for carrying a wafer to be treated, a pair of open-close type wafer carrying wire conveyors being parallel spaced at a certain distance, a means for opening and closing the wafer carrying wire conveyors operatively associated therewith, and a treated wafer carrying conveyor; a reaction chamber with an opening at the bottom disposed above wafer carrying wire conveyors; a wafer table disposed beneath the opening of the reaction chamber, vertically movable to be fixed vacuum-tightly to the opening of the reaction chamber at an uppermost position; a subtable which is fittable vacuum-tightly in the center of the wafer table and is vertically movable separately therefrom; elevator means for vertically moving the wafer table and the sub-table to take the wafer mounted thereon into and out of the reaction chamber; and control means for driving the wafer carrying means, the reaction chamber, the wafer table and the sub-table in linkage motion.

4,336,439
METHOD AND APPARATUS FOR LASER SCRIBING AND CUTTING

Michael W. Sasnett, Los Altos, and Richard J. Saunders, San Jose, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Oct. 2, 1980, Ser. No. 193,330
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LH **15 Claims**

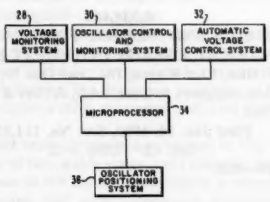


1. An apparatus adapted for removing a portion of a rigid material by thermal reaction, said apparatus comprising:
- laser means for generating a high power beam of electromagnetic coherent radiation characterized by a state of polarization;
- means for aligning said beam to impinge said material; and
- means for controlling the polarization of said beam with respect to said material wherein said portion removed is symmetrically shaped.

4,336,440
WELD TRACKING/ELECTRONIC ARC SENSING SYSTEM

George E. Cook, Brentwood; George J. Merrick, Franklin, both of Tenn.; Urban A. Schneider, St. Petersburg, and Willibald R. Rosenberger, Pensacola, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1979, Ser. No. 54,517
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.34 **2 Claims**

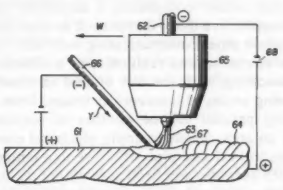


1. A welding electrode tracking system for tracking a welding electrode within a weld groove comprising:
- means for oscillating the arc struck between the welding electrode and the workpiece, laterally within the weld groove;
- means for providing an indication representative of the width of oscillation of the arc from a pre-established null;
- means for providing an electrical output representative of the voltage drop between the welding electrode and a side wall of the weld groove when the welding arc is extended by its oscillating means a given distance towards the weld groove side wall;
- means for automatically adjusting the pre-established null as a function of the magnitude of the voltage drop between the electrode and the weld groove side wall and the given width of oscillation at which the voltage is measured to maintain the null at a preselected position along the lateral line of oscillation;
- a constant current source for exciting the welding electrode; and
- an automatic arc voltage system for automatically spacing the electrode a prearranged distance from the bottom of the weld groove wherein the automatic arc voltage control system is inoperable when the oscillating means extends the welding arc from the null a distance equal to or greater than the given distance and wherein the automatic voltage control system measures the voltage between the welding electrode and the bottom of the weld groove for each of a plurality of cycles of oscillation during that portion of the oscillation path for which it is operative; averages the voltages measured between the electrode and the bottom of the weld groove over a preselected number of cycles of oscillation; compares the measured voltage with a preselected setpoint corresponding to the prearranged distance; and is responsive to an indication of a difference in the average measured voltage and the setpoint to adjust the spacing between the electrode and the bottom of the weld groove to substantially nullify the difference.

4,336,441
WELDING PROCESS

Tomokazu Godai; Tohru Sugiyama, both of Kamakura, and Yutaka Nishikawa, Fujisawa, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Oct. 15, 1979, Ser. No. 84,829
Claims priority, application Japan, Oct. 27, 1978, 53/133005; Jul. 7, 1979, 54/086299
Int. Cl.³ B23K *35/00*
U.S. Cl. 219—137 WM **22 Claims**

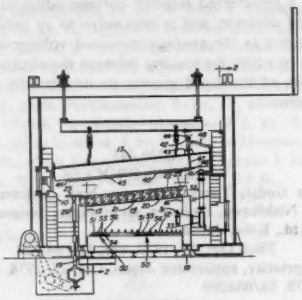


1. A welding method for welding a base metal which comprises:
- welding said base metal with a welding wire wherein said base metal comprises 3.5%–9.5% nickel by weight, less than 100 ppm oxygen and less than 100 ppm nitrogen and said welding wire comprises 8–15% nickel by weight, 0.1–0.8% manganese by weight, less than 0.15% silicon by weight, less than 0.1% carbon by weight, less than 0.1% aluminum by weight, less than 0.1% titanium, less than 0.0006% boron by weight, less than 100 ppm oxygen and less than 100 ppm nitrogen, wherein the sum of the oxygen content of the wire and twice the oxygen content of the base metal is less than 200 ppm and the sum of the nitrogen content of the wire and twice the nitrogen content of the base metal is less than 200 ppm;
- feeding said wire into an arc column developed between a nonconsumable electrode and said base metal;
- deflecting said arc forward in the welding advance direction by the influence of magnetic fields resulting from the connection of both said nonconsumable electrode and said wire to a DC voltage source for DC TIG welding such that the directions of current flowing through said wire and said nonconsumable electrode are the same when said wire is ahead of said nonconsumable electrode along a welding advance direction, and
- deflecting said arc forward in the welding advance direction by the influence of magnetic fields resulting from the connection of both said nonconsumable electrode and said wire to a DC voltage source for DC TIG welding such that the directions of current flowing through said wire and said nonconsumable electrode are opposite when said weld wire is behind said nonconsumable electrode.

4,336,442
COMBINATION RADIATION AND CONVECTION HEATER WITH CONVECTION CURRENT DIRECTING MEANS

Eugene W. Starr, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 12, 1981, Ser. No. 224,608
Int. Cl.³ F27D 11/02
U.S. Cl. 219—400 11 Claims



1. A heating system comprising a combination radiation and convection heater comprising a serpentine pipe structure of electroconductive metal comprising an inlet pipe, a plurality of intermediate pipes communicating with said inlet pipe and one another in end to end relation, and a closed end outlet pipe communicating with the last of said intermediate pipes, said pipes being arranged transversely spaced from one another and extending parallel to one another in serpentine relation to occupy an area, means to apply electrical energy to said pipe structure to heat said pipe structure to a temperature at which it radiates heat into a desired area within the adjacent environment, means to apply gas under pressure to said inlet pipe for conveyance through said intermediate pipes and said outlet pipe when said pipe structure is electrically heated, said outlet pipe having a plurality of axially aligned, longitudinally spaced openings for discharge of said gas to said desired area within said adjacent environment, further including means to direct said discharged gas in a desired direction toward said desired area, said means comprising nozzles extending in an outward direction from said axially aligned openings toward said desired area in the direction desired for convection heating.

4,336,443
MODULAR BAKE OVEN FOR DRYING VARNISHED ELECTRICAL COMPONENTS

Joseph M. Benedetto, 2059 Maybank Hwy., Charleston, S.C. 29412

Filed Jan. 22, 1981, Ser. No. 227,284
Int. Cl.³ F27D 11/02
U.S. Cl. 219—400 10 Claims

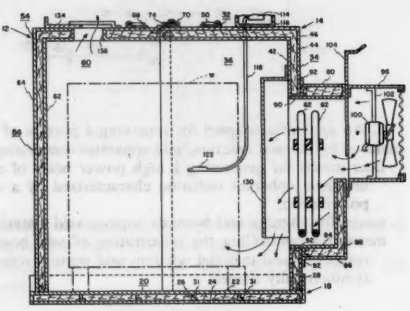
1. A modular oven device for baking electrical components located in a workspace having an access passageway of predetermined dimensions less than will pass said oven device when assembled, said oven device comprising in combination:

a rectangular base section having a thermally insulated bottom wall and an upstanding flange extending vertically above said bottom wall along three sides thereof, a fourth side being free of said flange;

first and second thermally insulated oven sections, each comprising first and second vertical side walls, an end wall, and a top wall, said first and second oven sections being disposed with complementary edges of said side and top walls in abutting relation and having their lower edges resting on said bottom wall within said upstanding flange so as to define a workpiece receiving oven chamber;

said edges of one of said oven sections having lip means overlying the line of abuttment with said complementary edges of the other thereof;

a heater and blower section mounted on the end wall of one of said oven sections and comprising a thermally insulated heater element housing, a blower housing, heating element means within said heater element housing, blower means within said blower housing, and an inlet air flow control means disposed between said housings and adapted to regulate air flow through said housings and into said chamber;



said other of said oven sections having an exhaust air outlet opening defined in said top wall thereof;

an exhaust air flow control means mounted on said other of said oven sections and adapted to regulate the air flow out of said chamber; and

said first and second oven sections, said base section, and said heater and blower section being separable from each other for transportation through said passageway and reassembly together within said workspace.

4,336,444
APPARATUS AND METHOD FOR CONVERTING ELECTRICAL ENERGY INTO HEAT ENERGY

Howard W. Bice, Fort Wayne, Ind., and Don W. Williams, Van Wert, Ohio, assignors to Gust, Irish, Jeffers & Hoffman, Fort Wayne, Ind.

Filed Jan. 14, 1980, Ser. No. 111,523
Int. Cl.³ H05B 1/02
U.S. Cl. 219—505 12 Claims

1. A heat-generating apparatus for converting electrical energy into heat energy comprising semiconductor means having a plurality of more than two semiconductor regions with junctions therebetween, a first of said regions serving as a control element, said first region in combination with a second region and other regions and junctions therebetween constituting a heat-producing section of said semiconductor means when an alternating current voltage of predetermined magnitude is connected thereacross,

an alternating current voltage source connected to said first and second regions, the connections between said source

and said first and second regions being bi-directionally conductive, said alternating current voltage and the impedance of said heating section providing a current through the latter at a value which maximizes the power loss thereacross thereby raising the temperature thereof to a predetermined level, and means proportioned and arranged for transferring the heat generated at a rate that maintains such power loss but prevents exceeding the same to an extent as will damage said semiconductor means.

4,336,445

ELECTRICAL TOTALIZER

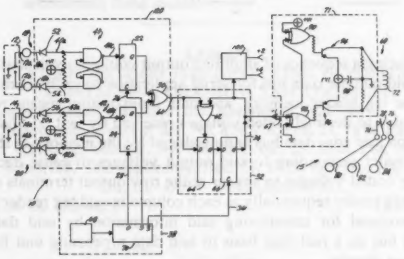
Thomas E. Baker, 9781 La Zapatilla Cir., Fountain Valley, Calif. 92708, and John P. Robertson, 2307 Aralia St., Newport Beach, Calif. 92660

Division of Ser. No. 901,138, Apr. 28, 1978, Pat. No. 4,227,070. This application Nov. 5, 1979, Ser. No. 91,381

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ G06M *3/08*

U.S. Cl. 235—92 ST **13 Claims**



1. A totalizer circuit for asynchronous occurrences in first and second input signals comprising:

a first bistable state circuit characterized in that it changes states, to one of two stable states, only once for each sequential occurrence in the first input signal in response to one or more strobes and each subsequent occurrence in the first input signal causes a different one of such two stable states to be assumed;

a second bistable state circuit characterized in that it changes states, to one of two stable states, only once for each sequential occurrence in the second input signal in response to one or more strobes and each subsequent occurrence in the second input signal causing a different one of both of such two stable states to be assumed;

means for applying said strobes to the first and second bistable state circuits alternately and at differing times and at a fixed rate; and

exclusive OR gating means coupled to the first and second bistable state circuits for forming output indications corresponding to the various relations in states between the first and second bistable state circuits and to thereby form a different output indication for each sequential occurrence in each of said input signals.

4,336,446

APPARATUS FOR THE MANUAL PRODUCTION OF DIGITAL PULSES

Dieter Hafner, Nuremberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

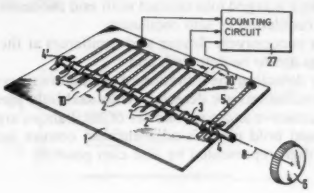
Filed Nov. 15, 1979, Ser. No. 94,389

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853505

Int. Cl.³ G06M *3/14*

U.S. Cl. 235—92 DE **9 Claims**

1. In a device for the manual production of digital pulse for input into an electronic forward-backward counter, the device comprising a rotatable actuating element connected mechanically with at least one pulse-producing means, several pulse-receiving elements, and an evaluating logic whereby individual pulses or pulse trains can be produced upon rotation of the actuating element by mutual interaction of the pulse-producing means with the pulse-receiving elements and which, depending on the direction of rotation of the actuating element, are to be counted in the forward counting input or the backward counting input of the forward-backward counter, the improvement wherein the pulse-producing means is arranged helically on a



rotatable axle operably connected with the actuating element, the pulse-receiving elements are arranged linearly along the rotating axle in at least one row to be actuated by the helically-arranged pulse-producing means, the distance between the pulse-receiving elements is different from the pitch of the helical line defined by the pulse-producing means, and the pulse-receiving elements interact electrically in at least two groups such that upon rotation of the actuating element, at least two pulses are produced which are offset in time and overlapping.

4,336,447

CONVERTER OF METER-GAUGE READINGS

Yuzo Oguchi; Takayuki Itakura, both of Suwa, and Akio Kawano, Osaka, all of Japan, assignors to Osaka Gas Co., Ltd., Osaka, Japan

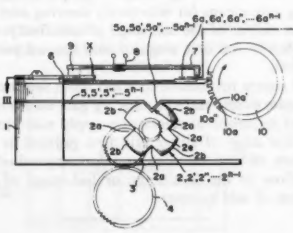
PCT No. PCT/JP78/00025, § 371 Date Jul. 16, 1979, § 102(e) Date Jul. 9, 1979, PCT Pub. No. WO79/00293, PCT Pub. Date Apr. 31, 1979

PCT Filed Nov. 14, 1978, Ser. No. 128,352

Claims priority, application Japan, Nov. 14, 1977, 52-136374; Nov. 8, 1978, 53-153639

Int. Cl.³ G06M *1/276*; G08C *19/16*

U.S. Cl. 235—92 EA **11 Claims**



1. A meter-gauge reading converter comprising:

a plurality of cam pieces rotating with a counting action of a meter gauge, said cam pieces converting the counting action into a binary code, said cam pieces having concaves and convexes formed in a circumferential direction on circumferential faces corresponding to binary digits, said cam pieces having teeth circumferentially on one side thereof and digit-adding teeth on the other side thereof;

a digit-adding gear located between two adjacent cam pieces, said digit-adding gear meshing with teeth on said one side of

one of said adjacent cam pieces, said digit-adding gears teeth having wide teeth with a constant pitch at a constant interval for binary condification which intermittently mesh with said digit-adding teeth on the remaining of said adjacent cam pieces, said digit-adding gear effecting raising of the digit in said remaining adjacent cam piece;

a plurality of oscillators having a first end fixed and a remaining end opposed respectively to the face of a cam piece;

hold pieces of flexible material each having one end fixed and the other end opposed to one of said oscillators, said hold pieces other ends being positioned to be displaceable by a convex as corresponding cam piece rotates, whereby said hold piece is urged into contact with said oscillator suppressing an oscillation of said oscillator;

means for successively flexing said oscillators at the time said readings are to be detected; and

means for detecting the vibration of oscillators whereby a first set of oscillations are detected when said hold piece is adjacent a concave and a second set of oscillations are detected when said hold piece is adjacent said convex indicating a binary digit represented by said cam position.

4,336,448

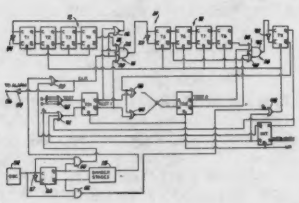
BINARY COUNTER AND CIRCUIT FOR TESTING SAME

Robert A. Shipp, and Chuan-Yung Hung, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 18, 1980, Ser. No. 141,344

Int. Cl.³ H03K *21/30*; G06M *3/12*

U.S. Cl. 235—92 MS **3 Claims**



1. A counter and circuitry for testing same, said counter partitioned into at least first and second portions, each portion containing a plurality of stages,

first gate means adapted when enabled to apply a clock signal to the first stage of said first portion,

steering gate means for selectively steering said clock signal or the output of the last stage of said first portion of said counter to the first stage of said second portion of said counter,

control means responsive to a test input for controlling said first gate means and said steering gate means in a predetermined sequence to selectively apply said clock signal to the first stage of either said first portion or said second portion of said counter and for respectively detecting overflow of the first stage or last stage of said second portion of said counter.

4,336,449

INTERFACE UNIT

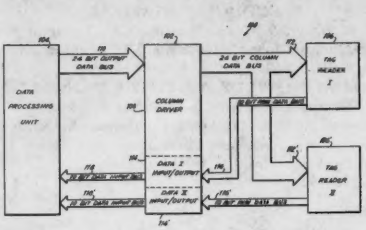
Russell C. Perry, St. James, N.Y., assignor to George F. Heinrich, Bayside, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,660

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—429 **6 Claims**

1. An interface unit for transferring coded information on a real time basis directly from a tag reader having a memory arranged in a preselected number of columns and rows and having a plurality of column terminals and row terminals for reading and storing information from encoded garment tags and a data processing unit which stores the transferred coded information, said interface unit being coupled to said data processing unit by an output data bus and a data input bus, said interface unit being coupled to said tag reader by a column data bus coupling said interface unit in parallel to the column terminals in the tag reader memory and a row data coupling the row terminals in the tag reader memory in parallel to the interface unit, said interface unit comprising means responsive to a sequential series of voltage level increases received over said output data bus in response to encoded information from the garment tag being stored in the tag reader memory for



producing a sequence of amplified output voltages sequentially on said column data bus for serial application to each column in the tag reader memory, and data input/output means responsive to decimal coded voltages received by said interface unit on said row data bus and produced by the memory in the tag reader responding to said output voltages to cause decimally coded voltages to appear at the row output terminals of said tag reader sequentially as each column in said tag reader is interrogated for transferring said information by said data input bus on a real time basis to said data processing unit for storage therein.

4,336,450

FOCUS DETECTING APPARATUS

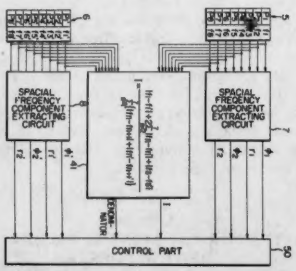
Ken Utagawa; Akira Ogasawara, both of Yokohama; Hiroshi Shirasu, and Kunihisa Hoshino, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,350

Claims priority, application Japan, Jan. 20, 1979, 54-5270; Mar. 16, 1979, 54-30046

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **9 Claims**



1. A focus detecting apparatus provided with a pair of first and second photosensor arrays each having plural photosensor elements arranged in a determined direction; and optical means for projecting light images of the same object onto said first and second photosensor arrays and modifying at least one of the relative position of the first photosensor array with respect

to the light image thereon and the relative position of the second photosensor array with respect to the light image thereon in response to the change of the focal position of an objective lens, whereby the focus state of said objective lens is detected from the relationship between said two relative positions, the improvement comprising:

(a) first means for forming phase outputs from said first and second photosensor arrays of phases respectively corresponding to the relative positions of said first and second photosensor arrays with respect to the light images thereon;

(b) second means for comparing the output corresponding to the amount of light entering said first photosensor array with the output corresponding to the amount of light entering said second photosensor array and forming an output corresponding to said comparison;

(c) third means for forming outputs according to the magnitude of variation of the amount of light caused by said light image in said direction of said arranged plural photosensor elements; and

(d) processing means for generating a synthesized output signal representing the focus state of said objective lens with respect to the object from the outputs of said first, second and third means.

4,336,451

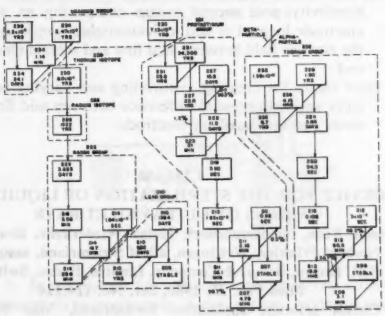
FIELD METHOD FOR DETECTING DEPOSITS CONTAINING URANIUM AND THORIUM

Lorin R. Stieff, P.O. Box 263, Kensington, Md. 20795

Continuation-in-part of Ser. No. 879,578, Feb. 21, 1978, Pat. No. 4,216,380, and Ser. No. 899,937, Apr. 25, 1978, Pat. No. 4,268,748. This application Dec. 21, 1979, Ser. No. 106,424

Int. Cl.[3] G01V 5/00; G01T 5/00

U.S. Cl. 250—255 13 Claims



1. A field method for detecting location of a deposit containing uranium or thorium and for distinguishing between uranium or thorium containing deposits having characteristic radioactive daughter products near the deposit comprising collecting subsurface samples from a vicinity of the deposit, studying the samples for characteristic radioactive daughter product matter, comprising the steps of contacting alpha particle sensitive films with the radioactive matter, etching the films, studying the etched films for alpha particle damage, detecting presence of the deposit containing uranium or thorium based on the alpha particle damage in the films caused by characteristic radioactive daughter product matter in the samples, plotting sample locations and alpha particle damage populations, and determining location of deposits containing uranium or thorium from the plotting, wherein the process of studying the samples comprises depositing a radioactive daughter product from a solution on a planchet or silver foil and exposing the films with the planchet or silver foil on which the radioactive daughter product has been deposited, and wherein the exposing comprises directly placing the planchet or foil on the films.

4,336,452

RADIATION DETECTOR CIRCUITS WHICH INHIBIT DEPOLING OF THE DETECTOR

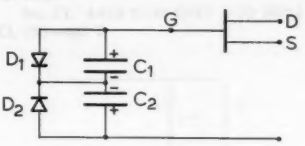
Geoffrey Baker, Southampton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1980, Ser. No. 137,028

Claims priority, application United Kingdom, Apr. 12, 1979, 7912912

Int. Cl.[3] G01J 1/00

U.S. Cl. 250—338 13 Claims



1. An electrical circuit arrangement comprising a pair of first and second detector elements formed of electrically polarized material, each of said elements having opposite first and second surfaces extending transverse to the direction of polarization, each of said first and second surfaces being provided with first and second electrodes, respectively, said detector elements being electrically connected in series by their first electrodes such that their directions of polarization are opposite each other;

characterized in that the circuit further comprises first and second diodes, the first diode electrically connected in parallel across one detector element and the second diode electrically connected in parallel across the other detector element, the polarities of the diodes being chosen such that for a decrease in the polarization of either one or both of the detector elements, the potential developed across said element will reverse bias the diode connected in parallel therewith.

4,336,453

NON-DISPERSION TYPE INFRARED ANALYZER FOR SIMULTANEOUSLY DETERMINING PLURAL COMPONENTS

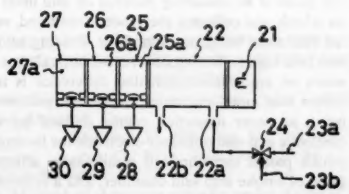
Takao Imaki; Hajime Mikasa, and Niro Sakai, all of Miyanohigashi, Japan, assignors to Horiba Limited, Kyoto, Japan

Filed Jul. 21, 1980, Ser. No. 170,879

Claims priority, application Japan, Jul. 20, 1979, 54-92829

Int. Cl.[3] G01J 1/00

U.S. Cl. 250—344 3 Claims



1. A non-dispersion type infrared analyzer for simultaneously determining plural components of a sample fluid and comprising:

a light source;

a sample cell;

a plurality of pneumatic detectors arranged in a row adjacent said sample cell, wherein said light source provides light rays arranged to pass serially through said sample cell and said plurality of pneumatic detectors;

a first conduit for supplying said sample fluid;

a second conduit for supplying a standard fluid;

a fluid flow path change-over means connected to said first and second conduits and said sample cell for alternately supplying fixed amounts of said standard fluid and said sample fluid to said sample cell;

wherein each of said plurality of pneumatic detectors is arranged to respectively correspond to one of said plural components to be determined.

4,336,454

SMOKE DETECTOR IONISATION CHAMBER USING NICKEL-63 SOURCE

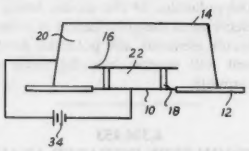
Jack Bryant, and Mark Janicki, both of Amersham, England, assignors to The Radiochemical Centre Limited, Amersham, England

Filed Aug. 27, 1979, Ser. No. 70,051

Claims priority, application United Kingdom, May 18, 1979, 7917447

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—381 **10 Claims**



1. A smoke sensing detector for use with an indicating device, said smoke detector comprising:

a chamber defining means defining a chamber adapted for allowing smoke to pass therethrough;

said chamber having a base which is an inner electrode and insulated from the remainder of the chamber, said remainder of chamber being an outer electrode;

said chamber having therein a collector electrode, at least one pillar of an insulating material on said inner electrode on which said collector electrode is mounted, said collector electrode being positioned for dividing said chamber into two regions having different electrical characteristics when an appropriate potential difference is maintained across said inner and outer electrodes, said two regions being an outer ionisation region defined by said outer electrode and said collector electrode for having a current which passes therethrough significantly affected by ingress of smoke into said chamber, and a reference ionisation region defined by said inner electrode and said collector electrode, for having an essentially constant current passing therethrough which is substantially unaffected by ingress of smoke into said chamber;

said collector electrode having structurally associated therewith a nickel-63 radioactive source emitting radiation into both ionisation regions.

4,336,455

SMOKE DETECTORS

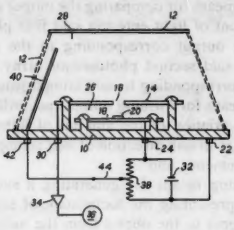
Jack Bryant, Buckinghamshire, England, assignor to The Radiochemical Centre Limited, Buckinghamshire, England

Continuation of Ser. No. 959,772, Nov. 13, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,366

Claims priority, application United Kingdom, Nov. 18, 1977, 48155/77

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—385 **10 Claims**



1. A smoke detector comprising:

first and second electrodes positioned to define therebetween an ionization chamber;

a radioactive substance positioned for emitting radiation into said ionization chamber for causing ionization of a gas therein;

first means for maintaining a potential difference across said first and second electrodes for causing an ion current to flow therebetween, said current being caused to vary when smoke enters said ionization chamber;

second means for testing the detector or for adjusting its sensitivity, said second means comprising an auxiliary electrode located in said ionization chamber for affecting the electric field between said first and second electrodes; and

third means for creating, controlling and varying an externally applied potential difference between said first electrode and said auxiliary electrode.

4,336,456

DEVICE FOR THE STERILIZATION OF LIQUIDS BY MEANS OF ULTRAVIOLET RAYS

Dieter Kuse, Niederrohrdorf; Heinz Wiederkehr, Brugg, and Norbert Winkler, Wettingen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Feb. 25, 1980, Ser. No. 124,114

Claims priority, application Switzerland, May 9, 1979, 4338/79

Int. Cl.³ G01N *21/24*

U.S. Cl. 250—436 **4 Claims**

1. An apparatus for sterilizing liquids by means of ultraviolet rays wherein the source of radiation used is a low-pressure high-current mercury vapor lamp which is provided with a cecum-shaped piece of tubing located on a discharge tube, comprising:

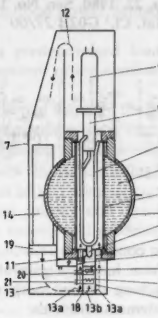
a pipeline through which said liquids flow disposed around said discharge tube;

at least one electrode bulb;

means for circulating a stream of air through the apparatus such that air travels past said at least one electrode bulb to an outer wall of the pipeline and such that air that has cooled on the outer wall of the pipeline is returned to said mercury vapor lamp at a temperature lower than the operating temperature of said cecum-shaped piece of tubing;

means for separating said stream of cooled air upstream of said cecum-shaped piece of tubing into first and second streams of cooled air such that said second stream of

cooled air communicates with said cecum-shaped piece of tubing and said first stream of cooled air directly communicates with said discharge tube; and



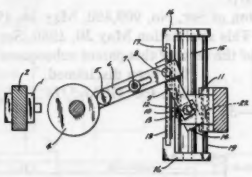
heating means positioned in said second stream of cooled air for heating said second stream of cooled air and for controlling the temperature of said cecum-shaped piece of tubing.

4,336,457

MOTION MECHANISM OF X-RAY FILM IN PANORAMIC RADIOGRAPHY

Timo Nieminen, Helsinki, Finland, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 9,686, Feb. 5, 1979, Pat. No. 4,198,566, which is a continuation of Ser. No. 870,621, Jan. 19, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,389
Claims priority, application Finland, Jan. 24, 1977, 770210
Int. Cl.³ G03B *41/16*
U.S. Cl. 250—439 P **7 Claims**



1. A mechanism for moving a planar X-ray sensitive film cassette in a panoramic X-ray system having a stationary frame, a rotatable support arm supported by the stationary frame, an X-ray source attached to one end of the rotatable support arm, and a film cassette holder attached to the opposite end of the rotatable support arm, the film cassette holder adapted to receive the planar film cassette for linear movement relative to the rotatable support arm;

said mechanism comprising:

(a) a rotatable rod supported by the film cassette holder with the longitudinal axis thereof parallel to the plane of the film cassette;

(b) a traction wheel in frictional driving engagement with said rotatable rod, said traction wheel having a rotational axis;

(c) means for rotating said traction wheel; and

(d) means for varying in a predetermined manner the angle between the rotational axis of said traction wheel and the longitudinal axis of said rotatable rod;

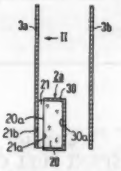
whereby the linear speed of the film cassette relative to the rotatable support arm during radiographic exposure is varied in a predetermined manner which is dependent upon the angle between the longitudinal axis of said rotatable rod and the rotational axis of said traction wheel.

4,336,458

DIAGNOSTIC RADIOLOGY APPARATUS FOR PRODUCING LAYER IMAGES OF AN EXAMINATION SUBJECT

Hans J. Krumme, Uttenreuth; Martin Schmidt, Erlangen; Guenter Schmitt, Erlangen, and Wolfgang Schubert, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,430
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2943027
Int. Cl.³ A61B *6/00*; G01T *1/20*; H01J *35/16*
U.S. Cl. 250—445 T **4 Claims**



1. Diagnostic radiology apparatus for producing layer images of an examination subject, comprising a patient support, a measuring arrangement for irradiating the examination subject from different directions having a radiation source which emits a radiation beam penetrating the layer to be examined whose extent perpendicular to the layer plane is equal to the layer thickness, and having a radiation receiver which supplies electric output signals corresponding to the measured radiation intensity, and a computer connected to the radiation receiver for computing the attenuation values of specific image points of the irradiated body layer from the output signals of the radiation receiver, the radiation receiver having a row of detectors having a collimator with one collimator grid compartment for each detector and having a plate supporting every detector in the collimator grid compartment associated with and providing radiation-absorbing material bounding the grid compartment and having a scintillator crystal and a photoelectric transducer optically in connection therewith, said photoelectric transducer being mounted on the plate, characterized in that the scintillator crystal (**20**) is mounted on the surface of the photoelectric transducer (**21**) such that the transducer is disposed between the plate (**3***a*) and the scintillator crystal (**20**), the scintillator crystal (**20**) being coated with an optical seal (**30**) on its surface, with the exception of the surface confronting the photoelectric transducer (**21**).

4,336,459

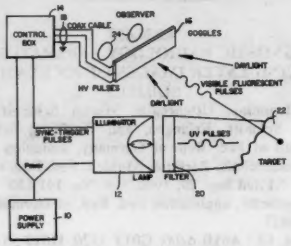
METHOD AND APPARATUS FOR DETECTING FLUORESCENCE UNDER AMBIENT LIGHT CONDITIONS

Homer Fay, Snyder, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 11, 1980, Ser. No. 158,642
Int. Cl.³ F21V *9/16*; G01N *21/64*
U.S. Cl. 250—459 **44 Claims**

1. Method of detecting visually under daylight conditions the presence of a fluorescent material, which method comprises observing said material through a gated aperture which is opened at predetermined intervals for periods of predetermined duration while simultaneously exposing said material to periodic pulses of stimulating light of a wavelength appropriate to cause fluorescence of said material, the frequency of said

stimulating light pulses being synchronized with the frequency of the opening of said gated aperture, whereby said aperture is



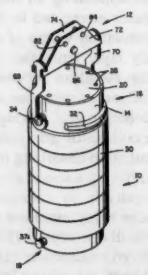
open for at least a portion of the period during which fluorescence is produced by said stimulating light pulses.

4,336,460

SPENT FUEL CASK

Ralph E. Best, Dublin, Ohio; Vijay Bhandari, Chamblee, Ga.; Richard L. Creeden, Poway, Calif.; Michael E. Mason, Lilburn, Ga.; Harrison R. Panter, Norcross, Ga.; Jack D. Rollins, Roswell, Ga., and Richard A. Schreiber, Decatur, Ga., assignors to Nuclear Assurance Corp., Atlanta, Ga.

Filed Jul. 25, 1979, Ser. No. 60,794
Int. Cl.³ G21F *5/00*
U.S. Cl. 250—506 **8 Claims**



1. A cask for spent nuclear fuel assemblies, said cask comprising:

an elongate body member for containing said spent nuclear fuel assemblies, said body member having a top end and an outer surface;

a pair of trunnions disposed on said outer surface adjacent said top end, each of said trunnions comprising:

a surface for selective engagement by a lifting means;

a first element attachable to said body member to provide a first load path for supporting the weight of the body member when said trunnion surface is engaged by a lifting means;

a second element attachable to said body member to provide a second said load path; and

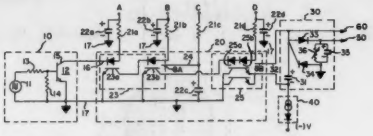
means for attaching said first element and said second element to said body member, so that the first and second elements of each trunnion provide redundant first and second load paths for supporting the weight of said body member between the body member and the lifting means engaging the trunnion.

4,336,461

FAIL-SAFE APPARATUS

Edward S. Ida, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1980, Ser. No. 189,626
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **4 Claims**



1. A fail-safe circuit comprising:

(a) a first opto-isolator having a gain of at least unity and having input switching element, output switching element and input LED element terminals;

(b) a second opto-isolator having a gain of at least unity and having input switching element, output switching element and input LED element terminals, said input LED element terminal of said second opto-isolator being connected to the output switching element terminal of said first opto-isolator;

(c) a pulsating signal source connected to the input LED element terminal of said first opto-isolator;

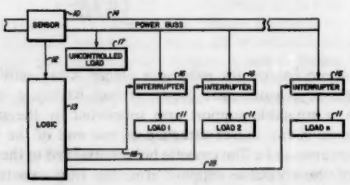
(d) means for simultaneously applying a DC high binary logic level signal to the input switching element terminals of said first and second opto-isolator whereby a pulsating logic signal is generated at the output switching element terminal of said second opto-isolator.

4,336,462

ELECTRICAL LOAD RESTORATION SYSTEM

Walter P. Hedges, Laveen, and C. Gardner Sullivan, II, Phoenix, both of Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Continuation of Ser. No. 909,850, May 26, 1978, Pat. No. 4,211,933. This application May 30, 1980, Ser. No. 154,775
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.³ H02J *3/14*
U.S. Cl. 307—35 **3 Claims**



1. In an energy management method employing apparatus for automatically limiting the total instantaneous consumption of electrical energy in a residence having a plurality of energy-consumming variable demand loads having different nominal current demands, said method including

measuring a quantity indicative of the total power to the loads which are then in operation, and

automatically interrupting the current, if any, to each of said loads in a predetermined sequence when the quantity indicative of the total power to the loads then in operation exceeds a predetermined peak value of the quantity indicative of the total power demand of the residence, until the quantity indicative of the total power is less than the predetermined peak value of the quantity indicative of the total power demand,

the improvement whereby the quantity indicative of the total power is maintained as high as possible without exceeding said predetermined peak value of the quantity indicative of the total power demand, said improvement comprising:

(a) establishing a predetermined load shedding sequence which is independent of the nominal current demands of said loads;

(b) measuring the actual values of the quantities indicative of the power consumption of each load which is interrupted;

(c) selecting from among those loads which have been interrupted, the loads which, according to said actual values and independent of said nominal current demands, can be restored without causing said quantity indicative of the total power to exceed said predetermined peak value of the quantity indicative of the total power demand; and

(d) automatically restoring said selected loads to operation; the measurement of said actual values of the quantity indicative of the power consumption enabling load restoration selections based thereon without modification of said energy management apparatus to account for variations in the nominal current demands of said loads.

4,336,463

ANNUNCIATOR

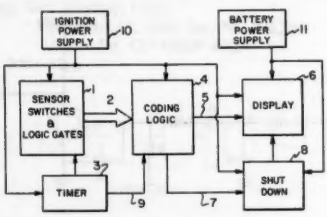
Bruce R. Beeghly, Youngstown, Ohio, assignor to The Economy Engine Company, Youngstown, Ohio

Continuation-in-part of Ser. No. 923,591, Jul. 12, 1978, Pat. No. 4,246,493, which is a continuation-in-part of Ser. No. 826,389, Aug. 22, 1977, abandoned. This application Nov. 14, 1980, Ser. No. 206,884

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ H02J *9/06*

U.S. Cl. 307—66 **12 Claims**



1. A shut-down and first-out annunciator device for an internal combustion engine or the like comprising:

a. a plurality of parallel connected sensor switches which change condition when a fault condition occurs,

b. a logic circuit which converts the change in condition on one of the plurality of sensor switches into a binary digital output indicative of the sensor switch which has changed condition and for creating a temporary shut-down signal,

c. a digital display means for converting the binary digital signal produced by the logic circuit into a digital readout,

d. shut-down means responsive to the temporary shut-down signal for creating continuous signals for latching the digital display and power FET having a control element by application of the signal to said control element,

e. a first power supply circuit outputting energy only during normal operation to power the sensor switches, logic means, display means and shut-down means during normal operation, and

f. a second power circuit comprising a battery for powering during and after shut-down a portion of the device including the display means and shut-down means but excluding the sensor switches.

4,336,464

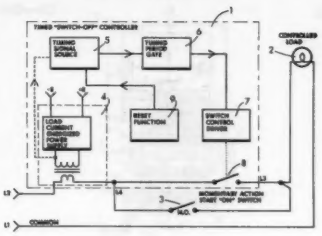
TWO TERMINAL TIMED ELECTRIC SWITCH PROVIDING ZERO OFF-STATE CURRENT FLOW THERETHROUGH

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed May 10, 1979, Ser. No. 37,822

Int. Cl.³ H01H *7/00*

U.S. Cl. 307—141.4 **18 Claims**



1. Two terminal timed switch device which serves to substantially connect into but one side of an electric power circuit from which all operative power is therefrom derived for operation of the time control functions through utilization of the effects of current flow through the said device during the timing period "on" state; said timed switch substantially including:

a. a source of electric a.c. power;

b. an a.c. load means;

c. at least two conductive elements coupled between the said source and said load, wherein the said elements form substantially a first electric circuit path and a second electric circuit path for the effective flow of electric energy between the said source and said load;

d. controlled switch element means coupled effectively in series with at least one of the conductive element electric circuit paths so as to alterably effect a condition of maximum electric current flow therethrough during the timing period and negligible electric current flow therethrough upon cessation of the said timing period;

e. control means coupled to said switch element means and cooperative therewith so as to establish the instantaneous condition of electric current flow therethrough;

f. time delay means including a combination of electronic semiconductor circuit means, effective so as to provide a time related event signal which couples to the said control means;

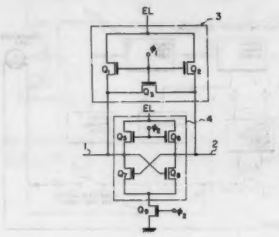
g. power supply means, the output of which is coupled to at least the said control means and said time delay means so as to effect the operation thereof; importantly having but two essential input terminals thereto; said input terminals further being coupled in series with but one said electric circuit path between the said source and said a.c. load and operative to receive power therefrom during the period of maximum current flow, whereas negligible, substantially zero power flow occurs once the timing period is complete; and,

h. initiating means coupled effectively at least in parallel with said switch element means and effectively in series with said power supply means and operative to produce at least a momentary flow of current through the electric circuit path between the said source and said load and to thereby effect the control means to establish current flow through the controlled switch element means for a finite period of time until the said time related event signal occurs, whereupon the current flow through the controlled switch element ceases.

4,336,465
RESET CIRCUIT

Masao Nakano; Yoshihiro Takemae, and Katsuhiko Kabashima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1979, Ser. No. 61,252
Claims priority, application Japan, Jul. 28, 1978, 53-92308
Int. Cl.³ H03K *5/00*
U.S. Cl. 307—238.3 **5 Claims**



1. A reset circuit for resetting the state of first and the second circuits by bringing the first and second circuits to a predetermined common potential, said reset circuit comprising

first and second reset transistors for respectively connecting said first and second circuits to a common voltage source corresponding to said predetermined potential,

a short circuit transistor, having a lower threshold voltage than the threshold voltages of said first and second reset transistors, for connecting in common said first and second circuits, and

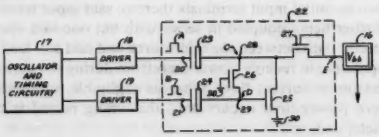
means for applying a signal simultaneously to said first and second reset transistors and to said short circuit transistor for causing conduction of said short circuit transistor to occur before conduction of said first and second reset transistors as a result of said difference in threshold voltages, said difference being due to selectively implanted ions in the manufacture of the respective transistors,

wherein said threshold voltages of said first and second reset transistors are approximately in the range from 2.2 to 2.8 volts, and said threshold voltage of said short circuit transistor is approximately in the range from 1.2 to 1.3 volts.

4,336,466
SUBSTRATE BIAS GENERATOR

Rahul Sud, Colorado Springs, and Kim C. Hardee, Manitou Springs, both of Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Jun. 30, 1980, Ser. No. 164,284
Int. Cl.³ H03L *1/00;* **H03K** *3/354, 3/017*
U.S. Cl. 307—297 **9 Claims**



1. A bias generator for the substrate of a metal-oxide-semiconductor integrated circuit which includes a circuit reference voltage and transistors each having an inherent threshold voltage conduction point, said generator comprising:

means for generating first and second trains of period pulses such that said first periodic pulses and said second periodic pulses have the same frequency and are phase synchronized, and such that said first periodic pulses are first occurring and have a duty cycle greater than that of said second periodic pulses;

a first input terminal for receiving the train of first periodic pulses;

a second input terminal for receiving the train of second periodic pulses;

a first node capacitively coupled to said first terminal for receiving positive and negative voltage transitions derived from positive and negative amplitude transitions associated with said first pulses;

a second node capacitively coupled to said second terminal for receiving positive and negative voltage transitions derived from positive and negative amplitude transitions associated with said second pulses;

a first transistor coupled to said first and second nodes and biased by the reference voltage so as to couple voltage transitions between said first and second nodes;

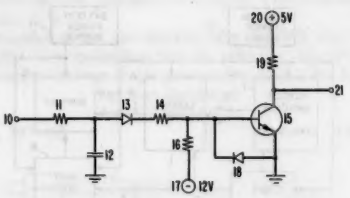
a second transistor coupled between the reference voltage and said first node and controlled by the voltage on said second node for clamping said first node to the reference voltage in response to voltage transitions which drive the potential of said second node a threshold voltage more positive than the reference voltage; and

means for driving the substrate voltage to a voltage level slightly more positive than the voltage at said first node.

4,336,467
VOLTAGE DETECTOR

Richard J. Lisco, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1980, Ser. No. 117,051
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—350 **2 Claims**



1. A telephone line voltage detector for use in telephone pair gain systems and for detecting the presence of positive test voltages greater than a predetermined threshold on either conductor of said telephone line and, in response to the detection of said test voltage, generating an output signal from said detector, said output signal being used to initiate testing of said pair gain system and of said telephone line, said detector comprising in sequence

a low-pass filter,

a first diode,

a first resistor, and

a threshold detector, the two ends of said first resistor connected between said first diode and said threshold detector, thereby enabling said low-pass filter to operate substantially linearly,

said threshold detector comprising

a transistor, and

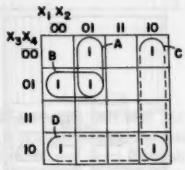
means comprising a second diode and a second resistor for biasing said transistor to the cut-off state, said second diode providing a compensating voltage drop opposite to the voltage drop across said first diode in response to said input voltage applied to said detector.

4,336,468

SIMPLIFIED COMBINATIONAL LOGIC CIRCUITS AND METHOD OF DESIGNING SAME

Richard Spillman, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 15, 1979, Ser. No. 94,450
Int. Cl.[3] H03K *19/00, 19/20*
U.S. Cl. 307—440 8 Claims



1. A logic circuit for implementing a given, partially symmetric Boolean function $f(x_1-x_n)$ having one output and which is symmetric with respect to several variables of the input variables x_1-x_n such that the function is invariant under the permutation of the several variables, comprising:

(a) symmetric logic means for filtering only redundant values of the several variables, the redundant values being "don't cares"; and

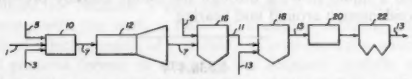
(b) combinational logic means, connected to said symmetric logic means, for generating the one output and having a construction as a function of the "don't cares"

4,336,469

METHOD OF OPERATING A MHD POWER PLANT

Stanley R. Wysk, Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 13, 1980, Ser. No. 206,584
Int. Cl.[3] H02N *4/02*
U.S. Cl. 310—11 7 Claims



1. A method of operating a magnetohydrodynamic power plant comprising the steps of:

a. combusting a fossil fuel substoichiometrically to produce a product gas having temperature of approximately 2500 C. and containing nitrogen oxides;

b. passing the product gas through a magnetohydrodynamic channel to generate electricity;

c. passing the product gas leaving the magnetohydrodynamic channel to a dwell chamber;

d. injecting reducing agent into the product gas passing from the magnetohydrodynamic channel to the dwell chamber;

e. holding the nitrogen oxides containing product gas in the dwell chamber at a temperature of at least 950 C. for a period of about 1 second, thereby permitting said reducing agent to react with the nitrogen oxides contained in the product gas to reduce a substantial portion of the nitrogen oxides to molecular nitrogen;

f. combusting the product gas leaving the dwell chamber in air to completely oxidize any reducing agent remaining in the product gas leaving the dwell chamber; and

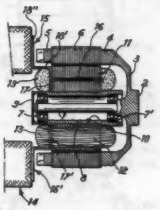
g. venting the completely combusted, reduced nitrogen oxide content product gas to the atmosphere.

4,336,470

ROTARY ELECTRIC MACHINE OF THE IN-OUT TYPE PROVIDED WITH INTEGRAL STATOR SUPPORTING MEANS, COMPONENT FOR SAID MACHINE AND METHOD FOR ASSEMBLING THE SAME

Giorgio Gutris, 231.6.2 Avenida de 27 de Enero, Premia de Mar, Spain

Continuation of Ser. No. 804,755, Jun. 8, 1977, abandoned. This application Oct. 18, 1979, Ser. No. 85,958
Claims priority, application Italy, Jun. 15, 1976, 24283 A/76
Int. Cl.[3] H02K *15/00*
U.S. Cl. 310—42 23 Claims



1. A rotary electric machine of the in-out type comprising:

an inner stator including a stator core of ferromagnetic material and at least one stator winding;

said stator core having substantially planar opposite faces and cavities;

said stator winding including internal portions housed in said cavities and head portions positioned axially external to said planar faces of said stator core;

an outer rotor supported for rotation about the axis of said stator; and

support means for connecting said stator to a static external structure, said support means comprising at least one plate-shaped rigid intermediate component including a portion in abutting contact with at least one of said planar opposite faces of said stator core and at least one of said head portions of said stator winding adjacent thereto; said portion of said support means being gripped between and in pressure engagement with said at least one planar opposite face and said at least one head portion due to the tension of said winding.

4,336,471

STATOR ASSEMBLY FOR STEPPING MOTOR

Michel G. Plancon, Besancon, France, assignor to Timex Corporation, Waterbury, Conn.

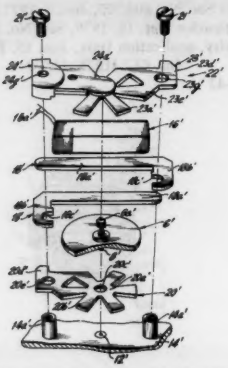
Filed Oct. 24, 1980, Ser. No. 200,229
Int. Cl.[3] H02K *37/00*
U.S. Cl. 310—49 R 4 Claims

1. In a stepping motor of the type having first and second stator members in spaced apart, overlapping relation to define a gap therebetween in which a rotor disc is mounted on a central axle for rotation and having a coil magnetically coupled to the first and second stator members, the improvement comprising:

(a) a magnetically permeable first stator member having a central hub, multiple spoke-like first pole pieces radiating from the hub with at least one of said first pole pieces extending beyond said rotor disc in a first direction forming a first motor arm and a central aperture in the hub through which one end of the rotor axle extends for rotation;

(b) a stator bridge assembly comprising a magnetically permeable second stator member having a central hub and multiple spoke-like second pole pieces radiating from the hub in spaced, overlapping relation to the hub and pole pieces of the first stator member with at least one of said second pole pieces extending beyond said rotor disc forming a second motor arm in a second direction from said first motor arm for providing spaced, non-overlapping relation between said

first motor arm and said second motor arm for substantially reducing magnetic losses and further comprising a non-magnetically permeable plastic holder member united to the second stator member, said second stator member having a central aperture in the hub axially aligned with the central aperture of the first stator member and said plastic holder



member having portions forming a bushing in the central aperture of second stator member for receiving the other end of the rotor axle with remaining portions of the plastic holder member forming a support bridge between the first and second stator members; and

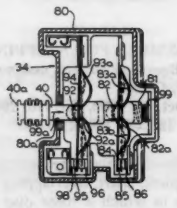
(c) means for holding the stator bridge assembly and first stator member together.

4,336,472

CENTRIFUGAL SWITCH ACTUATOR FOR A MOTOR

James I. Czech, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 7, 1980, Ser. No. 109,797
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—68 E **12 Claims**



1. A linkage for operating a stationary switch in response to the rotational velocity of a motor shaft, said shaft having a centrifugal mechanism mounted thereon and movable in response to a change in the rotational velocity of said motor shaft, and linkage comprising:

a lever mounted adjacent to and adapted to be moved by said centrifugal mechanism, said lever having a notched end, and

an actuator for said stationary switch having a plurality of adjacent grooves thereon, said notched end of said lever positioned to mate with one of said grooves,

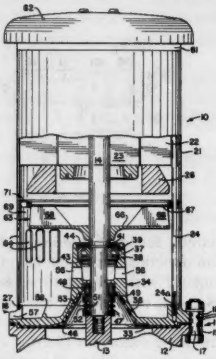
whereby the relative position of said lever with respect to said centrifugal mechanism and said actuator can be fixed by selective positioning of said notch in one of said grooves.

4,336,473

ELECTRIC MOTOR

Dale D. Wetters, and Gene L. Meyer, both of Bluffton, Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Nov. 5, 1979, Ser. No. 91,074
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—88 **9 Claims**



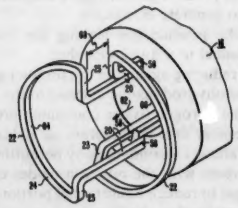
1. An electric motor including a drive shaft for driving a liquid pump, comprising a motor shell, an end bell fastened to said shell adjacent one end thereof, said end bell and said shell forming a rotor cavity and said shaft extending through said cavity, said end bell comprising a wall having an opening therein and said drive shaft extending through said opening for connection to said pump, a bearing within said cavity and mounted on said wall and supporting said shaft, said wall forming a common wall between the motor and the pump and the wall having a motor side and a pump side, said motor cavity being on said motor side and a liquid being pumped being on said pump side, said end bell being made of a material having a relatively high coefficient of thermal conductivity, and a cover having a relatively low coefficient of thermal conductivity extending across said pump side of said end bell and forming a layer of thermal insulation between said end bell and a liquid flowing through the pump, thereby preventing condensation around said bearing.

4,336,474

PHASE INTERLEAVED PERIPHERAL CONNECTOR RING END WINDING

Kent R. Davey, College Station, Tex., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1980, Ser. No. 139,082
Int. Cl.³ H02K *3/12*
U.S. Cl. 310—179 **6 Claims**



1. A dynamoelectric machine comprising:

a generally tubular stator core having a plurality of slots in said core's inner periphery;

a multiphase winding constituting a plurality of phase coils,

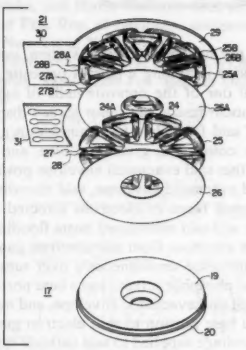
each of said phase coils including a plurality of coil sides receivable in said stator slots and a plurality of arcuate connector ring segments disposed on each end of the stator core electrically joining the coil sides, said connector ring segments being axially interspersed according to phase.

4,336,475

SLOTLESS BRUSHLESS MOTOR

Shigeki Morinaga; Kunio Miyashita; Tadashi Takahashi; Takeo Maeda, all of Hitachi, and Seizi Yamashita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1979, Ser. No. 66,767
Claims priority, application Japan, Aug. 14, 1978, 53/98150
Int. Cl.[3] H02K *3/00*
U.S. Cl. 310—198 12 Claims



1. A slotless and brushless motor provided with a shaft mounted for rotation, a permanent magnet rotor integrally rotating with the shaft, a stator of armature including coils each of which consists of a plurality of concentrically wound coil portions formed in sequence and disposed opposite the permanent magnet rotor, and a supporting member for supporting the stator, wherein the stator comprises three coils each phase of which differs by 120°, the coils are disposed adjacent each other in spaced parallel planes, each coil consists of eight coil portions and is provided with two terminals; a prepreg or adhesive sheet is respectively disposed between said three coils; and, each of the coil portions is made from a self-melting and adhering conductor.

4,336,476

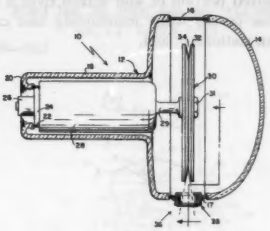
GROOVED X-RAY GENERATOR

William P. Holland, and Donld F. DeCou, Jr., both of West Redding, Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Continuation of Ser. No. 939,566, Sep. 5, 1978, abandoned. This application Nov. 23, 1979, Ser. No. 96,867
Int. Cl.[3] H01J *35/10*
U.S. Cl. 313—60 16 Claims

1. An X-ray target of the rotating type comprising:

a disc provided with an outer peripheral rim surface having therein a focal track groove; and a focal area means therein including inwardly extended wall surfaces of the



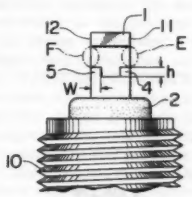
groove for producing an X-ray beam having substantially uniform intensity in a plane perpendicular to the groove.

4,336,477

SPARK PLUG

Shigeyasu Yamada, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jun. 5, 1979, Ser. No. 45,816
Claims priority, application Japan, Jul. 28, 1978, 53/93044
Int. Cl.[3] H01T *13/20*
U.S. Cl. 313—142 7 Claims



1. A spark plug comprising: a mount having a region of electric insulative material, a center electrode disposed in said insulative material and projecting outward, an outer electrode having a flat inner surface confronting an end surface of said center electrode and, means on said end surface of said center electrode defining projections extending toward said outer electrode, said means comprising a groove formed in said end surface of said center electrode to define raised portions positioned on the end surface of said center electrode.

4,336,478

METHOD OF EXTENDING THE LIFE OF A CATHODE RAY TUBE

John H. Quilty, Wilmington, and Lawrence M. Scholten, Sudbury, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Apr. 21, 1980, Ser. No. 142,584
Int. Cl.[3] H01J *31/10*
U.S. Cl. 313—478 15 Claims

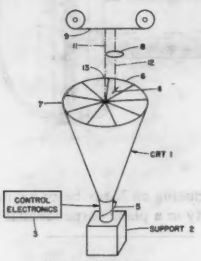
1. A method of greatly extending the life of a cathode ray tube which includes a cathode ray tube screen having a centralized screen portion in the neighborhood of an axis of rotation about which said cathode ray tube screen may be rotated, and a plurality of noncentralized screen portions, comprising the steps of:

a. generating a luminous image upon a first noncentralized portion of said screen over a first extended time period while maintaining said cathode ray tube screen stationary;

b. thereafter rotating said cathode ray tube screen about said axis of rotation through a given angle after the termination of said first extended time period during which said lumi-

nous image is produced in said first outer portion of said screen;

c. thereafter generating said luminous image in a second noncentralized portion of said screen over a second extended time period while maintaining said cathode ray tube screen stationary; and,



d. thereafter again rotating said cathode ray tube screen about said axis of rotation through a given angle for enabling generation of a luminous image in a third noncentralized portion of said cathode ray tube screen during a third extended time period while said screen is maintained stationary.

4,336,479

FLUORESCENT LAMP HAVING REFLECTIVE LAYER AND A METHOD FOR FABRICATING THE SAME

Churyo Kodama, Ohme; Taisuke Hirota, Hachioji; Hiroshi Ohno, and Etsuo Urataki, both of Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 89,744

Claims priority, application Japan, Nov. 8, 1978, 53/136806; Mar. 30, 1979, 54/36888

Int. Cl.³ H01J *61/35, 61/48*

U.S. Cl. 313—487 **8 Claims**

1. A fluorescent lamp comprising a glass tube having electrodes sealed in both ends thereof and containing mercury and a rare gas in suitable amounts, a first layer of phosphor formed on the entire inner surface of said glass tube, and a second layer of phosphor formed on said first layer of phosphor and restricted to an area subtended by a predetermined angle of less than 360° along the circumference as seen in axial cross section and extending in the axial direction along substantially the entire length of said glass tube.

4,336,480

CATHODE RAY TUBE

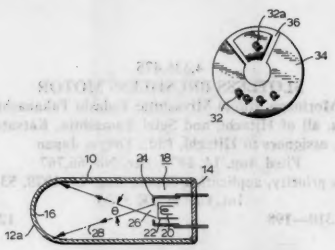
Hiroo Kobayashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,161

Claims priority, application Japan, Mar. 24, 1979, 54-35919; May 29, 1979, 54-68612; Aug. 23, 1979, 54-107853; Nov. 12, 1979, 54-148261; Jan. 11, 1980, 55-2365

Int. Cl.³ H01J *29/92*

U.S. Cl. 313—495 **9 Claims**



1. A cathode ray tube for a display system, comprising: an evacuated envelope including a pair of opposite ends, a face plate disposed at one of the opposite ends of said evacuated envelope, a monochromatic phosphor screen disposed on the inner surface of said face plate to luminesce in a color taken from among the colors red, green and blue, and an electron gun disposed within said evacuated envelope positioned at the other end of said evacuated envelope, said electron gun generating an unfocussed beam of electrons directed toward said phosphor screen and said unfocussed beam flooding said phosphor screen with electrons from said electron gun for causing said screen to luminesce simultaneously over substantially the entire area of said phosphor screen, and a base portion disposed at the other end of said evacuated envelope, and means extending through said base portion to said electron gun capable of carrying anode voltage supplied to said cathode ray tube of not less than 5 kilovolts.

4,336,481

METHOD OF AND APPARATUS FOR AUTOMATIC ELECTRONIC FLASH LAMP CONTROL

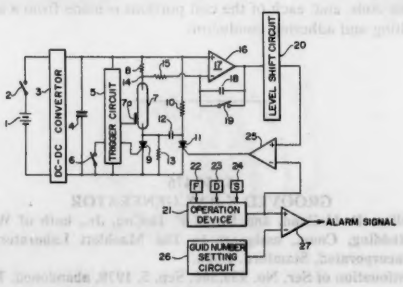
Saburo Numata, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Oct. 27, 1980, Ser. No. 201,124

Claims priority, application Japan, Oct. 26, 1979, 54-137587

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **7 Claims**



1. A method for automatically controlling the amount of light produced by an electronic flash lamp discharge apparatus in which a flash lamp discharge tube stops its discharge when

the amount of light required to properly expose the object being photographed with success is produced, comprising the steps of presetting the desired amount of light to be produced depending on the object distance, the lens diaphragm aperture and the film speed, said desired amount of light being enough to properly expose said object; measuring the actual amount of light produced in said electronic flash lamp apparatus by measuring a portion of the discharge current of said flash lamp discharge tube for the flash duration; and terminating the discharge of said flash lamp discharge tube when a predetermined relationship between said desired and actual amounts of light is reached.

4,336,482

REAR WINDOW WIPER MOTOR CONTROL

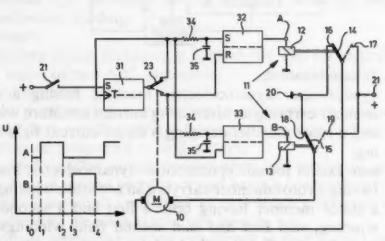
Horst Goertler, Sachsenheim; Joachim Munz, Gemmrigheim; Hans Prohaska, and Horst Rachner, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 27, 1979, Ser. No. 97,848

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851770

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 **1 Claim**



1. In an windshield wiper system having a current-controlled electric motor for driving windshield wipers through repeating wiping cycles by reversing the direction of rotation of the motor through a reversing switch comprising a pair of relays which control the polarity of current applied to the motor, the improvement therewith comprising: a limit switch mechanically coupled to said motor for detecting the end positions of said motor and for providing input signals indicative of said end positions; and, first and second time delay circuits each having an output respectively coupled to one of said relays and each of said delay circuits having a pair of inputs coupled to said limit switch, the first input of each delay circuit being responsive to respective ones of said input signals to activate the output of the delay circuit after a predetermined delay period and the second input of each delay circuit being responsive to respective ones of said input signals to deactivate the output of the delay circuit upon the application of an jnput signal, with the first input of the first delay circuit and the second input of the second delay circuit being responsive to a first one of said input signals provided by said limit switch when said limit switch detects a first end position of said motor, and with the first input of the second delay circuit and the second input of the first delay circuit being responsive to a second one of said input signals provided by said limit switch when said limit switch detects the other end position of said motor.

4,336,483

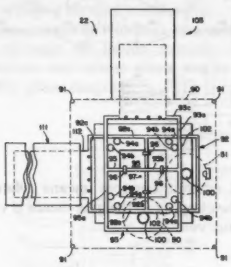
CAPACITIVE POSITION SENSOR

Richard L. Smith, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 24, 1980, Ser. No. 114,998

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—662 **3 Claims**



1. Apparatus for positioning a projected image in response to a dc input signal corresponding to a commanded position, said apparatus comprising:

a movable projector mechanism whose position determines the position of the projected image;

a motor connected to drive said projector mechanism;

means for providing a position feedback signal comprising a capacitive position transducer for developing a capacitance corresponding to the position of said projector mechanism and means for deriving a DC position signal corresponding to said capacitance, said transducer comprising a pair of plate-like electrodes fixedly spaced apart in opposed relation with respect to each other and a generally rectangularly shaped dielectric member defining a pair of orthogonal axes, said dielectric member being mechanically coupled to said projector mechanism so that movement of said projector mechanism causes movement of said dielectric member in a direction parallel to one of its said axes along a parallel plane between said electrodes so as to vary the proportion of said dielectric member between said electrodes and thereby vary the capacitance of said transducer linearly in correspondence with the position of said projector mechanism; and

means for converting the position signal with the input signal to provide a drive signal for the DC motor.

4,336,484

MOTOR CONTROL

Joseph A. Marinko, Ambler, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Jul. 3, 1980, Ser. No. 165,960

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—696 **11 Claims**

1. A step motor drive for a motor having at least one field winding for each of two phases comprising:

a solid state control device in series with each field winding and having a control terminal selectively permitting stepping drive current flow through its winding;

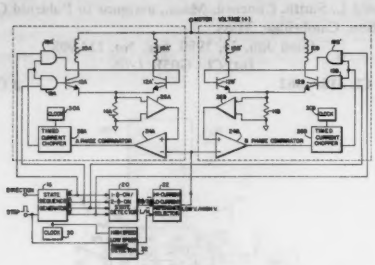
gate means for each of said control terminal;

sequence control means selecting the sequence of application of control signals to the gate means of the selected control device to determine the sequence of energizing the series windings;

timed current chopper means to apply a timed signal to the gate means to determine when the control signal may be applied to the control electrode of the control device to render it conductive and to determine what part of a drive signal current wave may be applied across that series field winding, and

means sensing the current flow in each phase to provide a

signal to a comparator which also receives a reference signal for comparison to provide a comparator signal to



the timed current chopper means whereby the timed signal of the chopper to the gate means is varied according to the motor velocity.

4,336,485

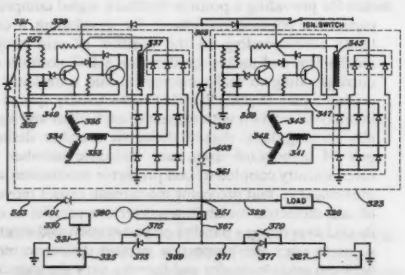
DUAL ALTERNATOR FEEDBACK SYSTEM

Lebern W. Stroud, 3237 Gerome, Fort Worth, Tex. 76118

Continuation-in-part of Ser. No. 33,443, Apr. 26, 1979. This application May 27, 1980, Ser. No. 153,426

Int. Cl.³ H02J *7/14*

U.S. Cl. 320—15 **1 Claim**



1. In a motor vehicle which includes electrically operated means employed in the operation of said vehicle and which carries electrically operated equipment used for emergency purposes, an electrical power system, comprising:

a first battery having a positive terminal coupled to said electrically operated means,

a second battery,

first alternator means driven by the engine of said motor vehicle and having an output lead,

second alternator means driven by the engine of said motor vehicle and having an output lead,

means for coupling said electrically operated equipment to said two output leads,

first electrical lead coupled to said two output leads and to the positive terminal of said first battery,

second electrical lead coupled to said two output leads and to the positive terminal of said second battery,

first diode means coupled to said first electrical lead for allowing the flow of current only from said two output leads to said first battery,

second diode means coupled to said second electrical lead for allowing the flow of current only from said two output leads to said second battery,

first regulator means for regulating the electrical voltage applied to said first alternator means,

second regulator means for regulating the electrical voltage applied to said second alternator means,

third electrical lead coupled to said output lead of said first alternator means and to the input of said first regulator means,

third diode means coupled to said third electrical lead for allowing the flow of current only from said output lead of said first alternator means to said input of said first regulator means,

fourth electrical lead coupled to said output lead of said second alternator means and to the input of said second regulator means, and

fourth diode means coupled to said fourth electrical lead for allowing the flow of current only from said output lead of said second alternator to said input of said second regulator means.

4,336,486

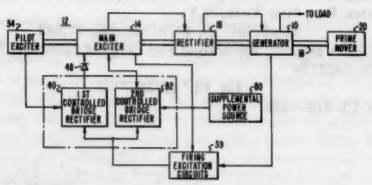
DYNAMOELECTRIC MACHINES BRUSHLESS SUPPLEMENTAL EXCITATION SYSTEM

Dale I. Gorden, Pittsburgh, and Sigrud R. Petersen, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1980, Ser. No. 110,570

Int. Cl.³ H02P *9/14, 9/30*

U.S. Cl. 322—63 **7 Claims**



1. In combination,

a synchronous dynamoelectric machine having a stator member carrying an alternating current armature winding and a rotor member carrying a direct current field winding;

a main exciter for said synchronous dynamoelectric machine having a rotor member carrying an armature winding, and a stator member having both a first and a second field winding, said first and said second field windings connected in parallel electrical relation to one another;

a rotatable rectifier assembly having an input circuit connected to receive alternating current power from said main exciter armature, and an output circuit connected to conduct direct current excitation through said synchronous machine rotor field winding;

a pilot exciter having a stator member carrying an armature winding and a permanent magnet rotor member, said pilot exciter being connected electrically in series with said first field winding;

means mechanically connecting said dynamoelectric machine rotor member, said rotatable rectifier assembly, said main exciter rotor member, and said pilot exciter permanent magnet rotor member for rotation;

means for converting alternating current to direct current having an input circuit connected to receive electrical power from said pilot exciter armature winding and having an output circuit connected to supply direct current to said first field winding of said main exciter;

means for deriving direct current excitation from a supplemental power source, said deriving means having an input circuit connected to receive electrical power from said supplemental power source and having an output circuit connected to supplement the direct current excitation applied to said second field winding of said main exciter, said supplemental power source being connected electrically in series with said second field winding and electrically independent of said dynamoelectric machine; and

whereby said pilot exciter and said supplemental power

source are connected electrically in parallel to and regulated independently of each other.

4,336,487

GENERATION CONTROL APPARATUS FOR VEHICLE GENERATORS

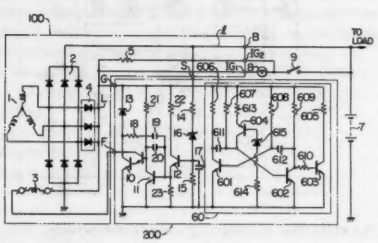
Shigeru Tanaka, Kariya; Katsutaro Iwaki, Chiryu; Hajime Matsuhashi, Kariya, and Keiichiro Banzai, Toyota all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 4, 1980, Ser. No. 156,466

Claims priority, application Japan, Jun. 7, 1979, 54-71961

Int. Cl.³ H02J *7/14*

U.S. Cl. 322—99 **7 Claims**



1. A generation control apparatus for vehicle generators comprising:

a vehicle A.C. generator having armature windings and an excitation winding;

a battery;

indicating means including a lamp or the like for indicating a status of said A.C. generator;

a key switch;

a first rectifier circuit connected to said armature windings, said first rectifier circuit having a first rectified output terminal connected to said battery;

a second rectifier circuit connected to said armature windings, said second rectifier circuit having a second rectified output terminal connected to said battery through said indicating means and said key switch;

a voltage regulating circuit connected to said second rectified output terminal through said excitation winding, for regulating a generated voltage of said vehicle A.C. generator at a predetermined value;

break detecting circuit means, connected to said second rectified output terminal in parallel with said voltage regulating circuit, for detecting a break of a line in the circuit of said excitation winding; and

an energization circuit for causing, responsive to an output of said break detecting circuit a current to intermittently flow said indicating means in such an on/off ratio that it flashes on and off at a human perceivable rate when the break of said line is detected by said break detecting circuit.

4,336,488

TRANSFORMER FOR THE CONTROLLABLE SHIFTING OF THE PHASE ANGLE OF OUTPUT VOLTAGES IN RELATION TO THE PHASE ANGLES OF INPUT VOLTAGES

Hans Glavitsch, Nussbaumen, and Gerhard Güth, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,494

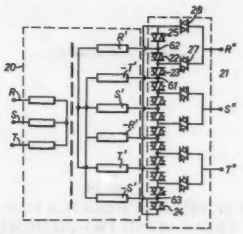
Claims priority, application Switzerland, Jul. 25, 1979, 6874/79

Int. Cl.³ H03K *3/352*

U.S. Cl. 323—215 **4 Claims**

1. A transformer for the controllable shifting of the phase angle of the output voltages in relation to the phase angles of the input voltages, especially for an alternating-current compound network, including at least one three-phase secondary winding galvanically decoupled from the primary winding, and in which the inner ends of the secondary winding sections corresponding to the phases are coupled with one another, each secondary winding section being divided into stages, and having a switch connected between the neighboring stages of each secondary winding section, comprising:

two three-phase secondary windings, the voltages of which are shifted through 60° in the mutually corresponding winding sections and whose phase angles neighbor one another in the phase diagram;



respective connection lines provided between the inner end of each stage of each winding section and the inner ends of the corresponding stages of at least one of the winding sections neighboring one another in the phase diagram; and

respective switches provided for predetermined ones of said connection lines which connect the inner ends of the stages of one winding with the corresponding ends of the stages of both of the neighboring windings in the phase diagram.

4,336,489

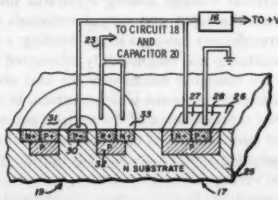
ZENER REGULATOR IN BUTTED GUARD BAND CMOS

Thomas M. Frederiksen, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 30, 1980, Ser. No. 164,851

Int. Cl.³ H01C *27/04;* **G05F** *3/18*

U.S. Cl. 323—231 **9 Claims**



1. A voltage limiting circuit for use in butted guard band CMOS integrated circuit chip structures that may be operated at supply voltages in excess of the breakdown voltage of said structures, said butted guard band structures including relatively heavily doped P and N type regions located respectively within lightly doped substrate material and acting to prevent surface inversion layers in said lightly doped substrate material, said relatively heavily doped P and N regions abutting each other, said circuit chip comprising:

an isolated zener diode having first and second electrodes and having a reverse biased breakdown voltage substantially equal to the breakdown voltage of said butted guard band structures;

means for coupling said first diode electrode to the first terminal of said supply voltage;

voltage dropping means for coupling said second diode electrode to the second terminal of said supply voltage; and

a lateral transistor having heavily doped collector and emitter regions of said one conductivity type spaced apart laterally on the surface of said chip and separated by a base region of opposite conductivity type, said emitter being coupled to said second diode electrode and said base and collector being coupled together and to the operating circuitry on said chip structure.

4,336,490

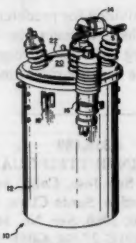
VOLTAGE SENSING APPARATUS FOR A VOLTAGE REGULATING TRANSFORMER

Charles E. Lewis, Zanesville, Ohio, assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jan. 28, 1981, Ser. No. 229,171

Int. Cl.[3] G05F *3/04*

U.S. Cl. 323—305 15 Claims



1. Bidirectional voltage sensing apparatus for sensing the voltage across the input and output terminals of a voltage regulating transformer having a shunt winding, a tapped series winding electrically and magnetically connected to said shunt winding, a tap changing mechanism for said series winding, and automatic control means which operates in response to a voltage signal representative of the voltage across said output terminals for controlling said tap changing mechanism to produce a preselected voltage across said output terminals, said bidirectional voltage sensing apparatus, comprising:

a sensing winding electromagnetically coupled to said shunt winding and having a predetermined turns ratio with respect to said shunt winding; and

potential means, electrically connected across the energized portion of said series winding, for producing a control voltage related to the voltage across said series winding by said predetermined turns ratio,

said sensing winding and said potential means being electrically connected in series such that the voltage across said sensing winding and said control voltage when taken together produces a total voltage which is representative of the voltage across said shunt and series windings, whereby the automatic control means can be operated in response to said total voltage to control the voltage across said output terminals with current flowing either into or out of said input terminals.

4,336,491

ELECTRONIC MONITORING SYSTEM STABILIZED AGAINST ACCIDENTAL TRIGGERING

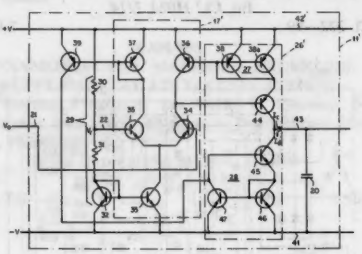
Robert Buck, Neukirch, and Ingo S. Ozech, Friedrichshafen, both of Fed. Rep. of Germany, assignors to i f m electronic GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,186

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004829

Int. Cl.[3] H01H *36/00*

U.S. Cl. 323—326 10 Claims



1. An electronic monitoring system comprising:

detector means sensitive to an ambient condition, including an oscillator emitting a periodically varying voltage wave whose amplitude significantly increases upon a predetermined change in said condition;

comparison means connected to said oscillator and to a source of reference voltage for producing a control pulse during a fraction of each cycle of said voltage wave as long as said amplitude surpasses said reference voltage;

a storage capacitor provided with circuit means for alternately establishing a charging path and a discharging path therefor, said circuit means being responsive to said comparison means for establishing one of said paths in the presence and the other of said paths in the absence of said control pulse; and

electronic switch means triggerable by said storage capacitor for energizing a load upon the charge of said capacitor attaining a predetermined value indicative of said change in said condition.

4,336,492

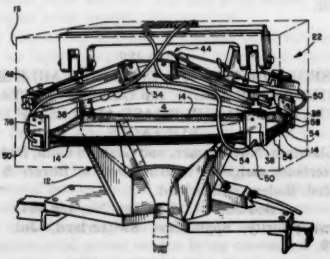
APPARATUS FOR TESTING AN HERMETIC SEAL IN A GLASS CATHODE RAY TUBE

Alton J. Torre, Wheaton, and Victor R. Schuster, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 5, 1980, Ser. No. 146,970

Int. Cl.[3] G01R *31/16, 31/24;* H01J *9/42*

U.S. Cl. 324—54 2 Claims



1. For use in the manufacture of a cathode ray tube, an apparatus for testing an hermetic, glass-like frit seal between

the funnel and the faceplate of an in-process cathode ray tube wherein the inside of said funnel has a conductive coating adapted to receive a test voltage applied to an anode button on a wall of said funnel, and wherein a discontinuity in the hermetic seal causes a high voltage breakdown in the seal, said apparatus including:

an electrically conductive elastomeric band capable of being stretched over the tube so as to conform to said hermetic seal between said funnel and faceplate;

means for supporting and locating said cathode ray tube in a position to be tested;

band mounting means for holding said elastomeric band and for stretching said elastomeric band to a rectangular stretched configuration larger than the size of the faceplate of the tube to be tested, and for relaxing the band such that it makes a static fit around said hermetic seal on said tube and conforms intimately to said seal to make an uninterrupted electrical and mechanical engagement therewith; and

means for applying a test voltage across the hermetic seal of said cathode ray tube between said conductive coating and said band;

an improvement comprising electrically conductive spring means embracing said elastomeric band at its periphery, said spring means being attached to said band mounting means for stretching and relaxing in concert with said elastomeric band, such that said spring means provides for more uniform grounding of said band with respect to said frit seal, and the added inward pressure against said band exerted by said spring means provides for more intimate electrical grounding contact of said band with said frit seal.

4,336,493

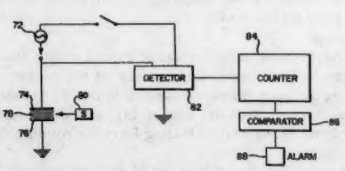
IDENTIFICATION OF MATERIALS USING THEIR COMPLEX DIELECTRIC RESPONSE

William D. Gregory, Vienna; Larry H. Capots, Annandale; Luigi Morelli, Sterling, all of Va.; John Muhlke, III, Bethesda, and Thomas A. Nolan, Jr., Chevy Chase, both of Md., assignors to Georgetown University, Washington, D.C.

Division of Ser. No. 28,452, Apr. 9, 1979. This application Aug. 10, 1979, Ser. No. 65,440

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **6 Claims**



3. Apparatus for identifying materials having frequency-responsive conductive and/or dielectric properties, comprising:

(a) capacitive means for producing a capacitive output signal and for producing a change in capacitive value when said material is placed in physical association therewith, said capacitive means including a capacitive element connected in series;

(b) capacitive response means connected with said capacitive element for evaluating the change of capacitive value from the capacitive means, said capacitive response means including a detector; and

(c) frequency generating means connected across said capacitive means for applying a plurality of frequencies thereto, and for producing a balanced electrical output signal which is reflective of the capacitive value of the capacitive means and which identifies said material.

4,336,494

INSULATION RESISTANCE TESTER

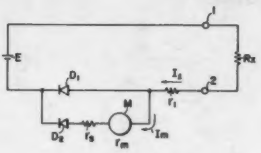
Shotaro Shindo, and Eiji Hayashi, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,224

Claims priority, application Japan, Jul. 12, 1979, 54/88466; Jul. 12, 1979, 54/88467

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—62 **5 Claims**



1. An insulation resistance tester comprising first and second semiconductor elements thermally balanced by each other, each of said semiconductor elements having a logarithmic characteristic, a series circuit including said second semiconductor element, a resistance and a meter, said first semiconductor element being connected in parallel with said series circuit.

4,336,495

INTEGRATED CIRCUIT ARRANGEMENT IN MOS-TECHNOLOGY WITH FIELD-EFFECT TRANSISTORS

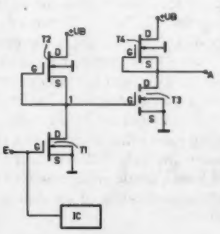
Friedrich Hapke, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1980, Ser. No. 117,884

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905294

Int. Cl.³ G01R *31/22, 15/12*

U.S. Cl. 324—158 T **2 Claims**



1. An MOS field-effect transistor integrated circuit having an internal test circuit, which comprises:

an external connection to said integrated circuit having an operating voltage range of between zero and a selected voltage of a first polarity during the normal operating cycle of said integrated circuit, said external connection being required for the normal operation of said integrated circuit;

an internal test circuit input terminal which is internally connected to said external connection; and

an internal test circuit output terminal which is internally connected to a selected location within said integrated circuit to provide a test activation signal to said selected location, said test circuit being activated by the application of a test signal of a second polarity opposite to that of said first polarity to said external integrated circuit connection.

4,336,496

ELECTRICAL CONTACT TEST APPARATUS TO TEST CONTACT RESISTANCE OF A SAMPLE TERMINAL

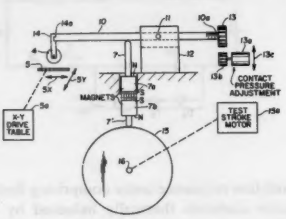
Rudolf Schnabl, Rodenbach, and Helmut Becker, Hanau, both of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,176

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939901

Int. Cl.³ G01R *31/22*

U.S. Cl. 324—158 P **10 Claims**



1. Electrical contact material test apparatus to test contact resistance of a sample (5) having

a sample carrier (5*a*) on which the sample (5) is placed;

a scale beam (10) defining two scale arms, a probe (4) positioned at one end of one of the scale arms and located in alignment with the sample carrier;

a balance counter weight (13) positioned on the other scale arm to determine the contact pressure between the probe (4) and the sample (5) when the probe is in engagement with the sample;

a test stroke operating means (15, 15*a*, 16) including a rotatable camming disk (15) engageable with a scale beam (10) and rotatable to selectively lift the test beam off the sample, and permit engagement of the test probe with the sample with the contact pressure determined by said balance counter weight when the beam is permitted to drop, comprising, in accordance with the invention,

a connecting link (7, 7*a*, 7*b*, 7′) for soft engagement of the camming disk (15) with the scale beam (10) including a cam follower (7′) in engagement with the camming disk, an engagement element (7) in engagement with the scale beam, and a pair of magnets (7*a*, 7*b*) interposed between the cam follower and the engagement element having like poles facing each other to provide a repelling force cushion between the cam follower and the engagement element and hence gentle engagement of the probe (4) on the sample (5) upon rotation of the disk controlling tipping of the beam.

4,336,497

ACCELERATION SENSOR

Richard G. Woodhouse, and Peter H. Salway, both of Birmingham, England, assignors to Lucas Industries Limited, Birmingham, England

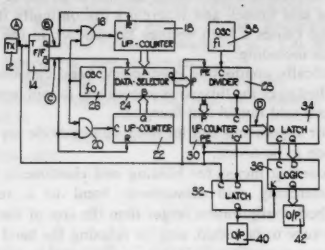
Filed Feb. 27, 1980, Ser. No. 125,111

Claims priority, application United Kingdom, Mar. 14, 1979, 7908985

Int. Cl.³ G01P *3/42, 15/00*

U.S. Cl. 324—162 **8 Claims**

1. A method of measuring the rate of change of frequency of a signal pulse train comprising: counting the number of pulses in a first fixed frequency pulse train occurring during each timing interval between successive pulses of the signal pulse train to derive a first count in each timing interval; dividing the frequency of a second fixed frequency pulse train by said first count for the immediately preceding interval to generate a divided pulse train; and counting the number of pulses in said divided pulse train in each timing interval to generate a second count related to the ratio of the change in the duration of the



time interval to the duration of the immediately preceding interval.

4,336,498

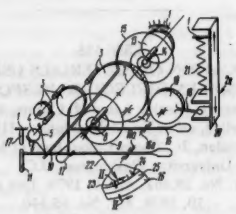
MAGNETIC THICKNESS GAUGE

Alexandr A. Lukhvich, ulitsa A.Kulman, 15, kv. 18; Valery A. Rudnitsky, ulitsa Slavinskogo, 35, kv. 36; Ivan I. Linnik, prospekt Partizansky, 32, korpus 1, kv. 91, and Genrikh B. Gavris, Leninsky prospekt, 127, kv. 265, all of Minsk, U.S.S.R.

Filed Jul. 24, 1979, Ser. No. 60,205

Int. Cl.³ G01B *7/10*; G01R *33/12*

U.S. Cl. 324—230 **1 Claim**



1. An apparatus for gauging the thickness of coatings on metal products, comprising:

a casing;

a wheel system accommodated in said casing and having a central shaft supporting a wheel of the system;

spring actuator means connected to one of the members of said wheel system, said spring actuator means, when wound up, exerting a biasing force for rotating said wheel system;

a gauging permanent magnet adapted to interact, by virtue of its field, with a ferromagnetic coating of the product, or with the base thereof in case of a nonmagnetic coating;

two balanced levers;

the first of said balanced levers carrying said gauging permanent magnet;

the second of said balanced levers adapted to interact with said first balanced lever in cases where a break away force of said first lever is not high enough to break away said gauging permanent magnet from the product being gauged;

two coiled springs;

the first of said coiled springs connected through one of its ends to said first balanced lever, and through its other end, to one of the shafts of said wheel system, said first coiled spring exerting a break away force on said first balanced lever tending to overcome the magnetic attraction between said gauging permanent magnet and the product being gauged to thereby break said gauging permanent

magnet away from the product, rotation of said wheel system by said spring actuator means increasing the break away force;

the second of said coiled springs connected through one of its ends to said second balanced lever, and through its other end, to said casing in such a manner as to adjust the spring tension;

a magnetic element made fast on said casing and adapted to attract said gauging permanent magnet after its having been broken away from the product being gauged;

a reset lever to bring said first balanced lever into an initial position prior to gauging a product, said reset lever being locked-in with the central shaft of said wheel system;

means for winding up said spring actuator means comprising a movable lever, an intermediate member adapted to get in mesh with said spring actuator means and locked-in with said movable lever, and a spring-actuated frame mounted on said casing traversably with respect thereto and adapted to contact the free end of said movable lever while traversing so as to turn the latter;

a circular scale rigidly fixed in position on said casing; and

a pointer set on the central shaft of said wheel system to indicate the gauged thickness on said circular scale.

4,336,499

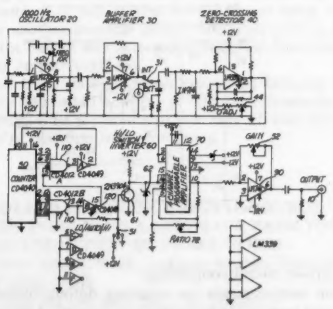
DYNAMIC HEADROOM TEST GENERATOR

Tyson C. A. Hoole, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 31, 1980, Ser. No. 135,822

Int. Cl.³ H03K *4/02*

U.S. Cl. 328—188 **2 Claims**



1. A dynamic headroom test signal generator circuit comprising in combination:

a 1000 Hz oscillator circuit;

a zero-crossing detector circuit;

buffer amplifier circuit means coupled between said 1000 Hz oscillator circuit and said zero-crossing detector circuit;

a counter circuit;

said zero-crossing detector circuit having a square wave output signal coupled to said counter circuit for clocking said counter circuit;

a programmable amplifier circuit;

switching and inverter circuit means coupled between said counter circuit and said programmable amplifier circuit; and,

an output circuit including an amplifier circuit coupled to said programmable amplifier circuit for providing a dynamic headroom test signal.

4,336,500

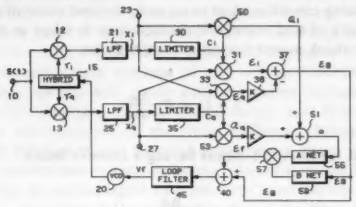
MSK DEMODULATOR FREQUENCY ACQUISTION APPARATUS AND METHOD

Stanley W. Attwood, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 14, 1980, Ser. No. 167,895

Int. Cl.³ H04L *27/22*

U.S. Cl. 329—50 **7 Claims**



1. In conjunction with a PSK demodulator, a frequency discriminator for preventing false lock comprising:

(a) detection means connected to the demodulator for developing an amplitude signal which is proportional to the absolute value of the demodulated signal;

(b) phase shifting means connected to receive the amplitude signal from said detection means and connected to receive a phase error signal from the demodulator for shifting the phase of one of the phase error signal and the amplitude signal with respect to the other;

(c) multiplying means for receiving the one phase shifted signal and the other signal from said phase shifting means and providing a frequency error signal at an output thereof; and

(d) means for combining the frequency error signal with the phase error signal in the demodulator for controlling the demodulator to lock onto the corrent carrier frequency.

4,336,501

FREQUENCY CHARACTERISTIC ADJUSTING CIRCUIT

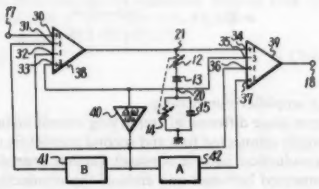
Kazumasa Ishikawa, Kawasaki; Shin-ichi Takahashi, Yokohama, and Masahide Yoneyama, Kawasaki, all of Japan, assignors to Nippon Columbia Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,765

Claims priority, application Japan, Sep. 26, 1978, 53-118291; Sep. 26, 1978, 53-118292; Oct. 2, 1978, 53-121299; Oct. 2, 1978, 53-121300

Int. Cl.³ H03 *1/34*

U.S. Cl. 330—109 **17 Claims**



1. A frequency characteristic adjusting circuit, comprising:

(a) first adding means supplied with an input signal,

(b) second adding means supplied with an output signal from said first adding means;

(c) a filter circuit consisting of a series connection of a first resistor and a first capacitor and a parallel connection of a second resistor and a second capacitor, said series and parallel connections being connected in series and supplied with an output of said first adding means, the con-

nection point between said series and parallel connections forming an output terminal of said filter circuit;

(d) feedback means for feeding back an output at said output terminal of said filter circuit to said first adding means;

(e) feedforward means for feeding forward the output at said output terminal of said filter circuit to said second adding means; wherein when a desired value of an angular velocity of a center frequency at a resonance point of a resonance characteristic of the frequency characteristic adjusting circuit is taken as ω_0 and a desired value of a band width of said resonance characteristic is taken as $\Delta\omega$

said feedback means having a transfer factor

$$3 - (1 + B)\frac{\Delta\omega}{\omega_o}$$

and said feedforward means having a transfer factor

$$(1 + A)\frac{\Delta\omega}{\omega_o} - 3$$

where A and B are each constants; and

(f) means for selecting one of said constants A and B as zero;

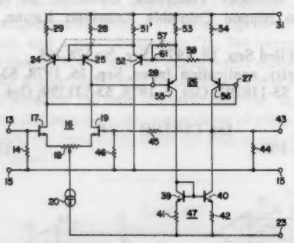
(g) said feedback means comprising a first feedback means for feeding back an output of said filter circuit, and a second feedback means for feeding back said output of said filter circuit through a transfer circuit having a transfer factor $\Delta\omega/\omega_0$ and said feedforward means comprises a first feedforward means for feeding forward the output of said filter circuit and a second feed forward means for feeding forward said output of said filter circuit through said transfer circuit.

4,336,502

AMPLIFIER WITH INPUT STAGE DIFFERENTIAL AMPLIFYING CIRCUIT

Motoomi Goto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 27, 1979, Ser. No. 107,637
Claims priority, application Japan, Dec. 28, 1978, 53-164842
Int. Cl.³ H03F 3/45
U.S. Cl. 330—253 **6 Claims**



1. An amplifier comprising:

an input stage differential amplifying circuit including differentially connected first and second transistors each having a conduction path, a constant current source commonly connected between one ends of the conduction paths of said first and second transistors and a first power supply, third and fourth transistors cascade-connected respectively to said first and second transistors at the other ends of said conduction paths and having control electrodes connected in common, and first and second resistance means connected between said third and fourth transistors and a second power supply, respectively;

a succeeding stage amplifying circuit including fifth and sixth transistors having conduction paths and control electrodes which electrodes are connected respectively to said other ends of the conduction paths of said first and second transistors;

first circuit means for detecting a sum of driving currents flowing through the conduction paths of said fifth and sixth transistors, and comprising third and fourth resistance means inserted respectively between one ends of the conduction paths of the fifth and sixth transistors and the second power supply, and fifth and sixth resistance means having one ends connected to the connection points of said third resistance means and said fifth transistor and of said fourth resistance means and said sixth transistor, respectively and the other ends connected in common; and

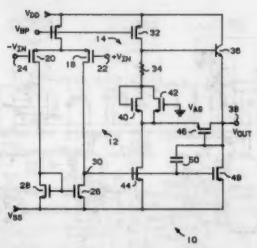
second circuit means for controlling potential of the common control electrodes of said third and fourth transistors in accordance with the sum of the driving currents of said fifth and sixth transistors, and inserted between the common control electrodes of said third and fourth transistors and the common connection point of said fifth and sixth resistance means, thereby maintaining constant said common control electrode potential of the third and fourth transistors.

4,336,503

DRIVER CIRCUIT HAVING REDUCED CROSS-OVER DISTORTION

Roger A. Whatley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1980, Ser. No. 217,073
Int. Cl.³ H03F 3/30, 3/45
U.S. Cl. 330—253 **6 Claims**



1. A driver circuit comprising:

current source means for sourcing output current via an output terminal in proportion to an applied drive current;

current sink means for sinking output current via the output terminal in proportion to a first control voltage;

drive means for applying the drive current to the current source means in proportion to a second control voltage;

shunt means for shunting the drive current away from the current source means in proportion to the first control voltage; and

cross-over compensation means for biasing the current source means at least a predetermined bias voltage above the output terminal, comprising:

a resistor having a portion coupled to both the current source means and the drive means;

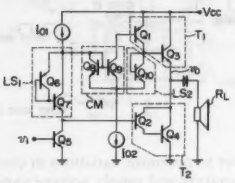
a first diode-connected device coupled between said resistor and said shunt means; and

a second diode-connected device coupled between said first diode-connected device and both the output terminal and the current sink means.

4,336,504
PUSH-PULL OUTPUT CIRCUIT

Kunio Seki, Tokyo, and Norihisa Katoh, Higashimurayama, both of Japan, assignors to Hitachi, Ltd. and Hitachi Ome Electronic Co., Ltd., both of Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,128
Claims priority, application Japan, Apr. 25, 1979, 54-50273
Int. Cl.³ H03F 3/26
U.S. Cl. 330—274 7 Claims



1. A push-pull output circuit comprising:

(a) a first transistor group having at least a portion thereof connected between a first operating potential point and an output terminal and including first transistor of a first conductivity type and second transistor of a second conductivity type which are connected in inverted Darlington configuration;

(b) a second transistor group having at least a portion thereof connected between said output terminal and a second operating potential point and including third transistor of said first conductivity type and fourth transistor of said second conductivity type which are connected in inverted Darlington configuration, the base of said third transistor receiving an input signal;

(c) a first level shifting circuit having one terminal thereof connected to receive said input signal;

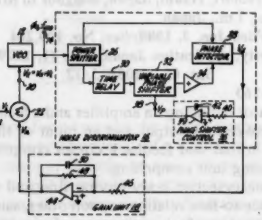
(d) a current mirror circuit including two transistors of said second conductivity type, the emitters of said two transistors being connected together, the input terminal and the output terminal of said current mirror circuit being connected to another terminal of said first level shifting circuit and the base of said first transistor of said first transistor group, respectively; and

(e) a second level shifting circuit connected between the commonly connected emitters of said two transistors of said current mirror circuit and the base of said second transistor of said first transistor group.

4,336,505
CONTROLLED FREQUENCY SIGNAL SOURCE APPARATUS INCLUDING A FEEDBACK PATH FOR THE REDUCTION OF PHASE NOISE

Donald G. Meyer, Sultan, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Jul. 14, 1980, Ser. No. 168,065
Int. Cl.³ H03L 7/00, 7/18, 7/22
U.S. Cl. 331—1 R 13 Claims



1. A low phase noise signal source comprising:

controlled oscillator means having an output terminal and a frequency control terminal, said controlled oscillator means for generating a periodic signal at a frequency determined by a frequency control signal supplied to said frequency control terminal;

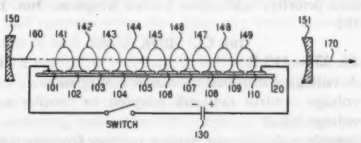
a first feedback path including noise discriminator means connected for supplying a feedback signal from said output terminal of said controlled oscillator means to said frequency control terminal thereof, said noise discriminator means including phase detector means having first and second input ports and an output port, said first and second input ports of said phase detector means being connected for receiving at least a portion of the signal supplied at said output terminal of said voltage-controlled oscillator means, said phase detector means including means for supplying a signal at said output port thereof that is representative of the phase difference between signals supplied to said first and second input ports; said noise discriminator means including time delay means for delaying an applied signal by a predetermined amount of time τ, said time delay means connected to delay the signal coupled to one of said first and second input ports of said phase detector means from said output terminal of said controlled oscillator means; said noise discriminator means including variable phase shift means having a phase shift control terminal and including means for shifting the phase of an applied signal by an amount determined by a phase shift control signal applied to said phase shift control terminal, said variable phase shift means being connected to shift the phase of the signal being coupled to one of said first and second input ports of said phase detector means from said output terminal of said controlled oscillator means; said noise discriminator means further including phase shift control means for supplying said phase shift control signal to said variable phase shift means, said phase shift control means being responsive to the signal supplied at said output port of said phase detector means and supplying a signal representative thereof to cause said variable phase shift means to supply a phase shift that minimizes the signal at said output port of said phase detector means; and

signal coupling means for coupling said signal supplied at said output port of said phase detector means as said noise discriminator feedback signal that is coupled to said frequency control terminal of said controlled oscillator means, said signal coupling means including means for establishing said feedback signal as negative feedback.

4,336,506
SEGMENTED PLASMA EXCITATION-RECOMBINATION LASER

William T. Silfvast, Holmdel; Leo H. Szeto, Howell, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1979, Ser. No. 82,308
Int. Cl.³ H01S 3/093
U.S. Cl. 372—62 11 Claims



1. A recombination laser comprising:

a resonant laser cavity (150, 151) containing a laser medium and energy abstracting means;

excitation means (130) for producing said laser medium in said resonant laser cavity;

characterized in that

said excitation means comprises at least two conductor strips (101–110) having at least one gap, which at least one gap provides at least one intervening discharge path; and

means for applying a high-voltage, high-current pulse to said at least two conductor strips;

said at least two conductor strips are fabricated from a material which is converted into a plasma as a result of the application of said high-voltage, high-current pulse, which plasma cools and recombines to form said laser medium.

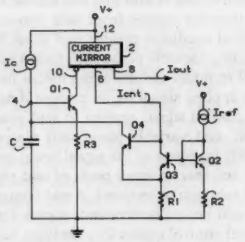
4,336,507
CURRENT OUTPUT RELAXATION OSCILLATOR

Byron G. Bynum, and Robert B. Jarrett, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1981, Ser. No. 229,485

Int. Cl.³ H03K *3/282*

U.S. Cl. 331—108 D **16 Claims**



1. A circuit for generating an oscillating output current, comprising:

a capacitor;

first means coupled to said capacitor for charging said capacitor;

second means coupled to said first means and responsive to voltage across said capacitor for generating said output current and a control current proportional to said output current; and

third means coupled to said second means and adapted to receive a reference current for providing said capacitor with a discharge path when said control current exceeds some predetermined value with respect to said reference current.

4,336,508
VOLTAGE CONTROLLED INTEGRATED CIRCUIT ASTABLE MULTIVIBRATOR

Terence G. Cole, and Stuart E. Marshall, both of Hampshire, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,073

Claims priority, application United Kingdom, Jun. 18, 1979, 7921193

Int. Cl.³ H03K *3/282*

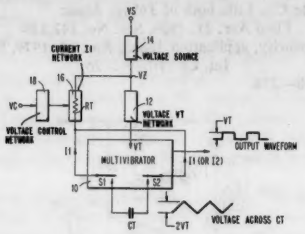
U.S. Cl. 331—113 R **11 Claims**

1. A voltage controlled oscillator comprising:

a voltage control network adapted to receive a control voltage input;

an astable multivibrator having a center frequency timed by the constant current charge and discharge of a capacitor, the period timed being proportional to VT/I where VT is half the voltage swing of the capacitor and I is a constant current;

integrated circuit means, responsive to the voltage control network, for generating both a voltage VT and constant currents I for the capacitor from a common voltage source via similar matched transistor/resistor networks so that the voltage VT and constant currents I track each



other in order to minimize variations in center frequency due to temperature and supply voltage variations.

4,336,509
OSCILLATION GENERATOR FOR AN ULTRASONIC LIQUID ATOMIZER

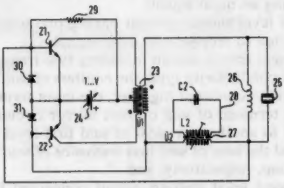
Franz Bernitz, Anzing, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,596

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906499

Int. Cl.³ B05B *17/06;* **H03B** *5/36*

U.S. Cl. 331—114 **10 Claims**



1. Oscillation generator for an ultrasonic liquid atomizer, including an oscillator circuit, a push-pull amplifier with inputs and inductive positive feedback connected in said circuit, a piezoceramic atomizer vibrator element and a load-dependent regenerative feedback coupling connected to said circuit, said coupling comprising a parallel resonant tunable frequency-selective sensor element having outputs connected to said inputs of said amplifier.

4,336,510
OSCILLATOR WITH A FEEDBACK CIRCUIT EMPLOYING A PRE-POLARIZED CERAMIC PIEZOELECTRIC OSCILLATING UNIT

Masashige Miyamori, Hakui, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 3, 1980, Ser. No. 109,284

Claims priority, application Japan, Jan. 11, 1979, 54/2494

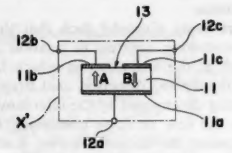
Int. Cl.³ H03B *5/32*

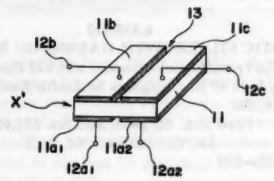
U.S. Cl. 331—163 **10 Claims**

9. An oscillator including an amplifier and a feedback circuit connecting between an output and an input of the amplifier, characterized in that said feedback circuit comprises a piezoelectric oscillating unit comprising:

a ceramic piezoelectric body having first and second surfaces in face-to-face relation to each other, said piezoelectric body having a first section pre-polarized in one direction between said first and second surfaces and a second section pre-polarized in the opposite direction to said one direction;

a first electrode provided on said first surface over said first section of said piezoelectric body; a second electrode provided on said first surface, in spaced relation to said first electrode and over said second section of said piezoelectric body; counter electrode provided on said second surface over both the first and second section of said piezoelectric body;





means coupling an output signal produced at the output of said amplifier across said first electrode and said counter electrode; and

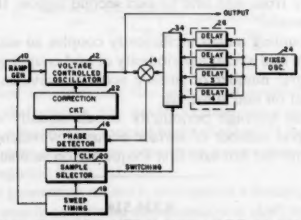
means coupling an output signal produced across said second electrode and said counter electrode to the input of said amplifier.

4,336,511

METHOD AND APPARATUS FOR INCREASING THE SWEEP RATE OF A LINEARLY SWEPT FREQUENCY OSCILLATOR

Chester E. Stromswold, Nashua; Robert T. Martel, Derry, both of N.H.; John Apostolos, Malden, Mass., and Robert P. Boland, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 9, 1979, Ser. No. 27,953
Int. Cl.³ H03B *23/00*
U.S. Cl. 331—178 **13 Claims**



1. A method for increasing the sweep rate and/or providing a more linear sweep frequency of a frequency generator whose frequency changes linearly in time where the phase of the generator's output is sampled at regularly occurring sampling intervals during the sweep, and in which the output frequency of the generator is corrected in accordance with sampled information so as to effect a linear frequency sweep with time comprising the steps of:

heterodyning the output of the frequency generator;

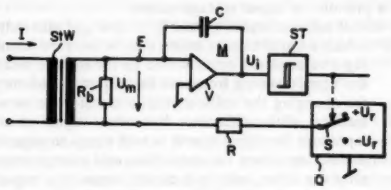
introducing a phase shift in the heterodyned output of the frequency generator by predetermined amounts in a specific periodic manner in specific time periods during the sweep of the frequency generator so as to produce more zero axis crossings of the heterodyned output of the generator than would occur without said phase shifting, whereby the number of samples of the frequency generator output per unit time is increased, thereby causing an increase in the amount of sampled information which is used to linearize the sweep of the frequency generator.

4,336,512

PULSE WIDTH GENERATOR HAVING A VARIABLE MARK-TO-SPACE RATIO

Jacob de Vries, Allenwinden, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Nov. 5, 1979, Ser. No. 91,114
Claims priority, application Switzerland, Nov. 13, 1978, 11635/78
Int. Cl.³ H03K *7/08*
U.S. Cl. 332—9 R **9 Claims**



1. A variable pulse width generator for generating a waveform having a periodically recurring and variable mark-to-space ratio, wherein the ratio of the difference between the space and mark durations to the sum of the space and mark durations is proportional to a selectable voltage,

comprising in combination:

integrator means, at least a portion of the selectable voltage being applied to the input of said integrator means,

switching means postcoupled to said integrator means for receiving a reference voltage of selectable polarity, the polarity of the reference voltage being selectable in dependence of the integrating action of said integrator means, and

a feedback path permanently connecting the output of said switching means to the input of said integrating means, and including a first resistor connected to said switching means and a second resistor in series therewith connected to said integrator means, said selectable voltage being applied across a selected one of said resistors, the junction of said resistors being free from any direct connection to either of said means,

at least a portion of a voltage developed across the output of said switching means being thereby applied across the input of said integrator means,

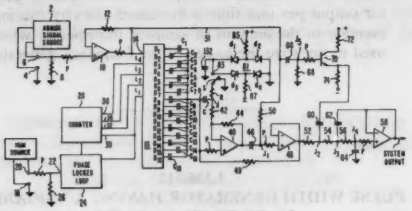
said switching means thereby operating in dependence of at least a portion of the voltage sum of said selectable and reference voltages appearing at the input of, and being integrated at the output of said integrator means, and the ratio of the difference between the space and mark durations to the sum of the space and mark durations being thereby substantially independent of the other of said first and second resistors.

4,336,513

HUM REDUCTION CIRCUIT

Richard J. Regan, Beverly, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 2, 1980, Ser. No. 165,171
Int. Cl.[3] H03H *19/00, 17/00, 17/02*
U.S. Cl. 333—173 13 Claims



1. Apparatus for reducing the fundamental frequency and harmonic frequencies of hum in a desired signal, comprising

a first input to which a desired signal which may include hum may be applied,

a second input to which a signal having the same frequency as the fundamental frequency of the hum may be applied,

an output,

a plurality of signal storage means,

circuit means coupled to said first input and said output into which a signal storage means may be inserted for subtracting a value of the signal stored by the storage means from the signals passing from said first input to said output and for changing the value stored in the storage means by a fraction of the difference between a signal at said first input and the signal stored in said signal storage means,

commutating means for connecting said storage means, one after the other, into said circuit means in a repeated sequence having the frequency of the fundamental of said hum so that the value stored in each storage means eventually becomes approximately equal to the value of any hum in the desired signal occurring at the time the storage means is connected to said circuit means,

means coupled to said first input for deriving the second harmonic of signals appearing thereat, and

means for adding said second derivative to the signals appearing at said output whereby the attenuation of any harmonics of the hum is more nearly the same, and

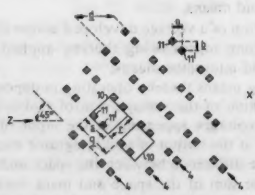
a system output connected to said latter means.

4,336,514

ACOUSTIC WAVE DEVICES

Edward G. S. Paige, Horton-Cum-Studley, England, assignor to National Research Development Corporation, London, England

Filed Sep. 18, 1980, Ser. No. 188,284
Claims priority, application United Kingdom, Sep. 20, 1979, 7932716
Int. Cl.[3] H03H *9/135, 9/64*
U.S. Cl. 333—195 26 Claims



1. In a surface acoustic wave (SAW) device including input means for generating acoustic waves, output means for delivering a signal from the device and a frequency-selective reflective array which comprises a plurality of parallel rows of individual scatterers, each scatterer forming one or more scattering centres from which acoustic waves, generated by the input means and propagated to the array, are scattered in a desired predetermined direction by Bragg reflection, the improvement consisting essentially of and in combination with the above elements:

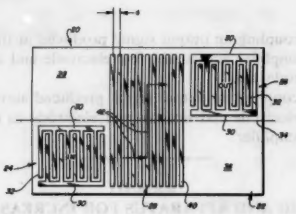
the scatterers being disposed such that the local spacing between scattering centres, in relation to the acoustic wavelength at the frequency at which Bragg reflection occurs in the desired direction, said Bragg reflection frequency being determined by the inter-row spacing associated with the row or rows containing those scattering centres, causes the acoustic waves scattered from the individual scattering centres at the Bragg reflection frequency to constructively interfere in the desired predetermined direction and to not constructively interfere in directions other than the desired direction.

4,336,515

ACOUSTIC FILTER WITH HARMONIC REJECTION

Adrian J. DeVries, Mount Prospect, and Kai Hansen, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 10, 1980, Ser. No. 195,998
Int. Cl.[3] H03H *9/64, 9/72*
U.S. Cl. 333—195 12 Claims



1. In a surface acoustic wave component including a substrate divisible into at least two surface regions, input surface acoustic transducing means capable of efficiently transmitting surface acoustic waves of first and second frequencies to a first but not a second one of said regions, output surface acoustic transducing means capable of receiving said waves in said second but not said first region, and means having an average periodic structure for coupling acoustic waves of said first frequency from said first to said second region; the improvement wherein:

said coupling means inefficiently couples an acoustic signal when said average periodicity of said coupling means is an integral number of surface acoustic wavelengths of said signal on said substrate;

and said average periodicity is substantially equal to an integral number of surface acoustic wavelengths of said second but not said first frequency on said substrate.

4,336,516

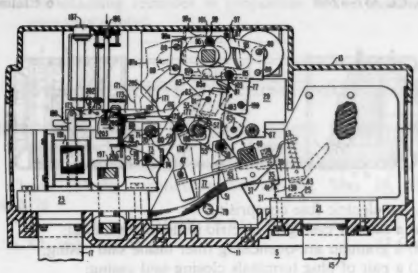
CIRCUIT BREAKER WITH STORED ENERGY TOGGLE-LOCK STRUCTURE

Walter V. Bratkowski, McKeesport; John A. Wafer, Brighton Township, Beaver County, and James P. Ellsworth, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 135,551
Int. Cl.[3] H01H *9/24*
U.S. Cl. 335—171 6 Claims

1. A circuit breaker comprising a housing, a circuit breaker

structure in the housing and having contact means operable to open and close an electric circuit, the structure also having an operating lever and a releasable trip member, a pair of toggle links connected between the contact means and the releasable trip member, a pivot pin connecting the links together, toggle spring means extending between the pivot pin and the operating lever, the operating lever being movable to charge the toggle spring means, a toggle lock lever releasably locking the pivot pin whereby the contact means are partially closed, unlock means for unlocking the toggle lock lever to enable the contact means to close, and latch means for latching the releasable trip member in position to discharge the toggle spring means and open the circuit.



4,336,517
REVOLUTION DETECTING DEVICE

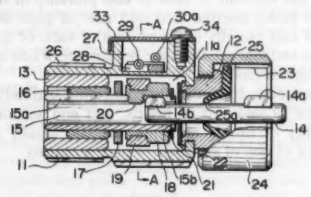
Kyoji Kobayashi, Chigasaki, and Takeo Furuya, Yokohama, both of Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Yokohama, Japan

Filed Sep. 12, 1979, Ser. No. 74,625

Claims priority, application Japan, Sep. 21, 1978, 53-128616[U]; Sep. 21, 1978, 53-128617[U]; Jun. 26, 1979, 54-86633[U]

Int. Cl.³ H01H *9/00*; H02K *11/00*

U.S. Cl. 335—205 **7 Claims**



1. A device for detecting the number of revolutions of a connection shaft means, the device comprising a connection shaft means, a permanent magnet body attached to the connection shaft means and a pulse generating means disposed apart from the magnetic body, wherein

said pulse generating means is arranged in a housing isolated from a casing containing said connection shaft means; and

said connection shaft means comprises a pair of shafts connected in driving relation in said casing radially inboard of said pulse generating means, one said shaft being a hollow outer shaft supported for rotation within said casing, the other shaft being an inner shaft having an end axially received within said hollow shaft, said magnetic body being fixed on a hollow nonmagnetic member sleeved over said hollow shaft at the end of said inner shaft, said outer shaft having means drivingly interconnecting said hollow magnetic member and inner shaft.

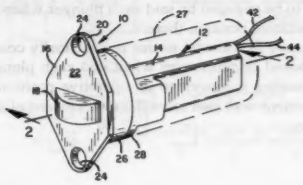
4,336,518
PLUNGER OPERATED MAGNETIC CONTACT SWITCH ASSEMBLY

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Nov. 17, 1980, Ser. No. 207,263

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—205 **10 Claims**



1. A plunger operated electrical switch assembly, comprising:

(a) a magnetic reed switch;

(b) means for holding said magnetic reed switch in a predetermined position;

(c) a plunger;

(d) a plunger guide located adjacent said means for holding said magnetic reed switch, said plunger guide permitting reciprocal movement of said plunger alongside and longitudinally of said magnetic reed switch, between a predetermined extended position and a depressed position;

(e) an elongate actuating magnet; and

(f) cavity means defined in said plunger for holding said actuating magnet in one of a plurality of predetermined positions relative to said magnetic reed switch when said plunger is in said extended position, said cavity means including a plurality of intersecting similarly oriented magnet receiving cavities, each including means for positively establishing a different predetermined location for said actuating magnet within said plunger.

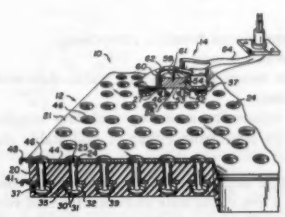
4,336,519
MAGNETIC ELECTRICAL CONTACT SYSTEMS

Maurice G. N. G. Lebecque, 9125 Wiltshire Pl., Burnaby, British Columbia, Canada (V3L 4N6)

Filed Aug. 8, 1980, Ser. No. 176,329

Int. Cl.³ H01H *36/00*

U.S. Cl. 335—206 **23 Claims**



1. A magnetic electrical contact system comprising

a first electrical member comprising

a surface with a plurality of closely spaced holes opening outwardly therefrom,

a plunger movably mounted in the first member in each hole thereof and movable longitudinally between a normal position and an operative position,

first electrical circuit means, and

first contact means on each plunger to form part of the first

circuit when said each plunger is moved from the normal position to the operative position thereof; and

a second electrical member to be moved over the surface of the first member and adapted to move each plunger away from its normal position to its operative position as said second member moves over said each plunger, said second member comprising

second electrical circuit means, and

second contact means forming part of the second circuit means to be engaged by said each plunger when moved to the operative position thereof,

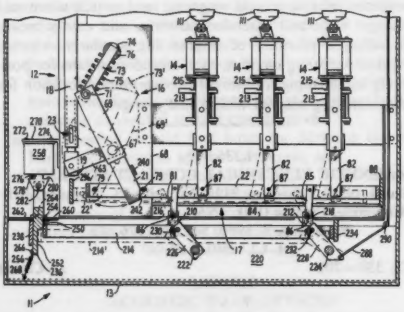
whereby said first circuit means is electrically connected to said second circuit means when said each plunger of the first member is moved to its operative position and into engagement with said second contact means of the second member.

4,336,520

METHOD AND APPARATUS FOR SHORT CIRCUIT PROTECTION OF HIGH VOLTAGE DISTRIBUTION SYSTEMS

Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif. 94022

Filed Jul. 25, 1980, Ser. No. 172,211
Int. Cl.³ H01H *3/00*
U.S. Cl. 337—191 **8 Claims**



1. A vacuum circuit breaker, comprising:

vacuum switch means;

first toggle means having a first stable state and a second stable state;

actuating means for actuating said first toggle means to change its state from either of said stable states to the other;

second toggle means for keeping said switch means closed when in a first stable state and allowing said switch means to remain open when in a second stable state, said second toggle means being operated between said stable states by said first toggle means, and comprising pivot means which are substantially unmoved during the operation of said second toggle means by said first toggle means;

displacing means for displacing said pivot means independently of said first toggle means and thereby opening said switch means; and

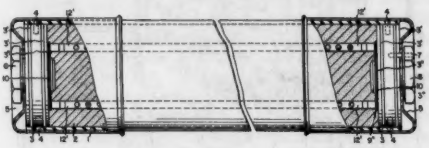
tripping means for causing said displacing means to rapidly displace said pivot means and thus rapidly open said switch means.

4,336,521

ELECTRIC FUSE

Frederick J. Kozacka, Main Ave., S. Hampton, N.H. 01913, and Richard A. Belcher, Drinkwater Rd., Hampton Falls, N.H. 03844

Filed Mar. 11, 1981, Ser. No. 242,771
Int. Cl.³ H01H *85/14*
U.S. Cl. 337—248 **6 Claims**



1. An electric fuse comprising

(a) a tubular casing of electric insulating material;

(b) a granular arc-quenching filler inside said casing;

(c) a pair of plug terminals closing said casing;

(d) a pair of recesses each in the center of one of the axially inner end surfaces of one of said pair of plug terminals;

(e) a pair of inserts each having a radially inner portion fitted into one of said pair of recesses, and each having a radially outer portion, said radially outer portion of one of said pair of inserts overlapping the axially inner end surfaces of one of said pair of plug terminals and defining a pair of gaps therebetween;

(f) a plurality of slots extending radially inwardly from the periphery of said radially outer portion of each of said pair of inserts;

(g) a plurality of ribbon-type fusible elements extending between and conductively connecting said pair of plug terminals;

(h) each of said plurality of fusible elements including a middle section and a pair of end sections bent at right angles to said middle section;

(i) said middle section of each of said plurality of fusible elements being inserted near the ends thereof into a pair of said plurality of slots in said radially outer portion of said pair of inserts;

(j) said end sections of each of said plurality of fusible elements being inserted into said pair of gaps defined between said radially outer portion of each of said pair of inserts and said axially inner end surface of one of said pair of plug terminals; and

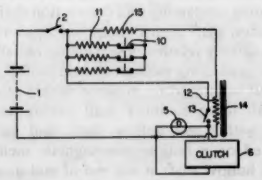
(k) solder joints conductively connecting said radially outer portion of said pair of inserts, said end sections of said plurality of fusible elements and said axially inner end surface of one of said pair of plug terminals.

4,336,522

VEHICLE SEAT-OCCUPANCY RECORDER

Kenneth G. Graham, 23 Apple Orchard Path, Thornhill, Ontario, Canada (L3T 3B5)

Filed Oct. 15, 1979, Ser. No. 85,017
Int. Cl.³ B60Q *1/26*
U.S. Cl. 340—52 R **2 Claims**



1. In apparatus for recording the degree of occupancy of

passenger seats of a vehicle comprising means to sense occupancy of at least one passenger seat of the vehicle, a totalizing recorder responsive to the extent of operation of the vehicle, and means responsive to said sensing means for controlling said recorder,

the improvement wherein the sensing means senses the number of passenger seats occupied, and the response means is adapted to control the rate of incrementation of the totalizing recorder in proportion to the number of seats unoccupied.

4,336,523
SUPERCONDUCTIVE SWITCHING AND STORAGE DEVICE

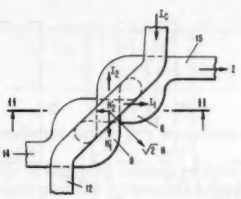
Rudolf Jaggi, Langnau, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1980, Ser. No. 154,547

Claims priority, application Switzerland, May 29, 1979, 4980/79

Int. Cl.³ H03K *19/95*; G11Q *11/44*

U.S. Cl. 340—825.79 **17 Claims**



1. A superconductive device exhibiting multistable states, comprising in combination:

a superconductor whose internal inductivity can be controlled by application of a magnetic field thereto and having at least one dimension which is comparable to or smaller than the penetration depth of said magnetic field in said superconductor, wherein said superconductor includes two branches over a certain length, said branches having mutual magnetic coupling such that an electrical current in said superconductor of at least a minimum amplitude necessary to cause bistability of said device will flow substantially in only one branch thereof when both branches are in their superconductive state,

means for producing said magnetic field for controlling the magnitude of said internal inductivity in said superconductor, said means including means for producing a magnetic field which magnetically co-acts with at least one of said branches of said superconductor to control the internal inductivity thereof, said branches remaining in their superconductive states in the presence of said magnetic field, and wherein the branch in which said current substantially flows can be controlled by application of said magnetic field.

4,336,524
VIDEO DISPLAY PAGER RECEIVER WITH MEMORY

Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015

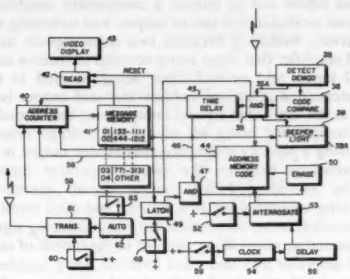
Division of Ser. No. 58,250, Jul. 17, 1979, Pat. No. 4,263,480. This application May 12, 1980, Ser. No. 148,877

Int. Cl.³ G08B *5/22*; H04B *7/24*; H04M *11/00*

U.S. Cl. 340—311.1 **8 Claims**

1. In a portable carried radio pager receiver having a video display for visually displaying a message, a memory for storing a series of limited content messages, and selectively controllable means actuatable from a remote transmitter to retrieve previously stored messages from the memory for visual display, the improvement comprising:

means enabling the previous entry of said series of limited content messages into the memory for pre-storing said messages, with each such message assigned a unique retrieval address code having fewer digits than the number of digits in the message,



and said controllable means responsive to receipt of one of said address codes to selectively retrieve the associated prestored message from the memory and applying that message to the video display for visual presentation.

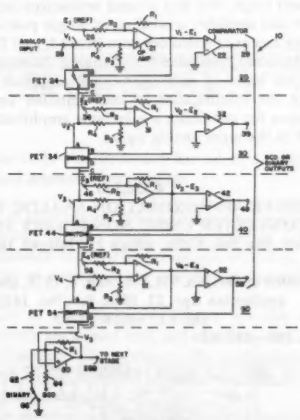
4,336,525
DIRECT CONVERSION ANALOG TO DIGITAL CONVERTER

William E. Chapple, III, Hartselle, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 7, 1980, Ser. No. 137,651

Int. Cl.³ H03K *13/02, 13/09*

U.S. Cl. 340—347 AD **1 Claim**



1. A subtractor analog to digital converter for providing direct conversion of analog signals and comprising: a plurality of analog signal processing sections each having an analog signal input, a digital signal output, and an analog signal output, the input of each of said signal processing sections being adapted for receiving an analog signal input for processing, the digital output being disposed for providing a binary output signal and said analog output being adapted for providing a selectable analog voltage output; said signal processing sections being arranged in sequence such that the input of a first signal processing section is adapted for receiving an externally supplied analog signal to be converted and subsequent sections being disposed sequentially such that the analog output of a preceding section provides the input to a succeeding section,

the digital output from each section compositely providing a digital representation of the signal level of the analog input signal coupled to said converter; each of said signal processing sections comprising an operational amplifier having first and second inputs and an output, a comparator amplifier having first and second inputs and an output, and switching means for selectively switching between two input signals; said operational amplifier first input being coupled to receive said analog signal input, said second input being adapted to receive a predetermined reference voltage and said output being coupled as the first input to said comparator, the second input of said comparator being set at a fixed voltage reference for providing a polarity difference comparator output in response to variations between the two comparator input signals thereby providing binary output signals therefrom; said switching means having first, second and third terminals, said first terminal being coupled directly to said analog signal input, said second terminal being coupled to the output of said operational amplifier and said third terminal being coupled as said analog signal output of each of said sections; each of said sections switching means being a field effect transister circuit for selectively switching between the respective section analog signal input and the operational amplifier analog signal output for coupling the operational amplifier analog signal output through said field effect transistor switch when the analog signal input exceeds the predetermined reference voltage input to said operational amplifier second input and simultaneously providing a comparator output signal which is a binary one; said plurality of signal processing sections are grouped into a plurality of signal processing stages, each stage comprising at least four sections; and further comprising means coupled between each of said processing stages for preparing any input analog signal from a preceding stage for processing thereby, said means for preparing comprising an operational amplifier having a first input adapted to receive said analog input signal from a preceding stage, a second input, and an output adapted to provide any residual analog output for processing by a subsequent stage, first and second resistances coupled respectively to said amplifier second input, single pole-double throw switching means coupled between ground, said first resistance and said second resistance for changing the signal applied to the second input of said operational amplifier and thereby changing the amplification of said amplifier on said analog signal input for providing a selectable amplification factor of 10 or 16 to the input analog signal.

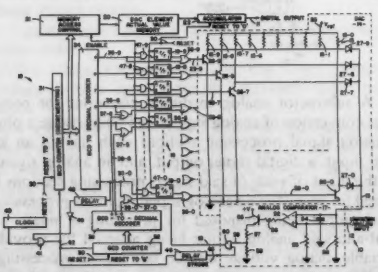
4,336,526
SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTER USING NON-BINARY SERIES

Basil Weir, San Jose, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Continuation of Ser. No. 931,166, Aug. 4, 1978, abandoned. This application Apr. 22, 1980, Ser. No. 142,644

Int. Cl.³ H03K *13/05*

U.S. Cl. 340—347 AD **17 Claims**



1. In a successive approximation type analog-to-digital converter wherein the unknown analog input is successively compared with reference signals having stepped values from an analog generator, wherein said reference signals are related by a selected series, the improvement wherein digital equivalents of the actual step values produced by said analog generator are stored in an actual value memory, and including digital summing means for summing the stored digital equivalents of the actual step values included in the analog reference signal that results in the closest comparison with the unknown analog input to obtain a digital representation of said analog input, whereby the digital representation will be accurate despite inaccuracies in the reference signals with respect to the selected series.

4,336,527
DIGITAL-TO-ANALOG CONVERTER

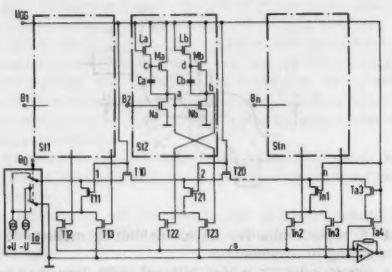
Frithjof von Sichart, Munich, and Wolf Springstubbe, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,238

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939455

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **2 Claims**



1. In a digital-to-analog converter for converting a digital input signal representing a plurality of binary digits into a corresponding analog output signal, said converter having (1) an R-2R-ladder network with a plurality of chained ladder cells corresponding in number to the number of said digits wherein each of the resistances of the R-2R-ladder network is formed of a respective drain-source path of mutually identical MOS transistors integrated on a common chip and wherein each ladder cell is composed of a series transistor inserted between two neighboring nodes of the ladder network and of cross transistors arranged between the node in front of said series transistor and a sum current output line and a common ground connection, respectively; (2) a constant current source arranged at one end of said ladder network; (3) a reference voltage source directly connected in common to the gates of said series transistors; and (4) a plurality of control circuits each receiving a respective digit of said digital input signal at a signal input, each of said control circuits associated with one cell of said ladder network and having two signal outputs for supplying alternate control signals to the gates of said cross transistors, the improvement comprising:

said cells of the R-2R-ladder network each being composed of a series transistor and of first, second and third cross transistors commonly connected by one of their main electrodes to a star circuit, and each of said first, second and third cross transistors connected by their second main electrodes to said node in front of the series transistor, to the sum current output line and to the common ground connection, respectively, wherein the gates of said first cross transistors are directly connected to said reference voltage source and each of the gates of said second and said third cross transistors is connected to a respective one of the alternatively operative signal outputs of the associated control circuit, and

said control circuits being connected in parallel to said refer-

ence voltage source and including switch means arranged between the reference voltage source and the signal outputs for shunting said reference voltage alternatively to one of said signal outputs in dependence upon the state of the respective digit of the digital input signals.

4,336,528

SEMICONDUCTOR RESISTIVE NETWORK

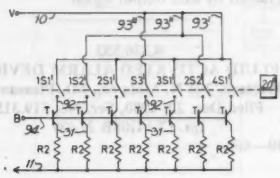
Jeffrey Kane, Cheadle Hulme, England, assignor to Ferranti Limited, Hollinwood, England

Continuation-in-part of Ser. No. 710,746, Aug. 2, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,258

Claims priority, application United Kingdom, Nov. 27, 1976, 49575/76

Int. Cl.³ H01L *27/04*; G08C *9/00*

U.S. Cl. 340—347 DA **14 Claims**



1. A semiconductor device in a monolithic semiconductor body comprising

(a) a plurality of weighted resistors of differing resistances;

(b) each of said plurality of resistors comprising a selected number of substantially identical resistor portions coupled in parallel to each other, the number of identical resistor portions being selected to provide the required differing resistances of its weighted resistor;

(c) said substantially identical resistor portions of each of said resistors of said plurality being spaced from each other by identical resistor portions of other resistors of said plurality in an interdigitated fashion, and being substantially uniformly distributed throughout said plurality of resistors; and each of said substantially identical resistor portions of said plurality of resistors extending linearly within said semiconductor body in a parallel relation with each other, and being electrically isolated within said semiconductor body from each other.

4,336,529

POSTAGE METER HAVING SHIELDED KEYBOARD TO PROTECT AGAINST ELECTROMAGNETIC RADIATION

Danilo P. Buan, Easton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,791

Int. Cl.³ G06F *3/02*; G07G *1/00*

U.S. Cl. 340—365 R **4 Claims**

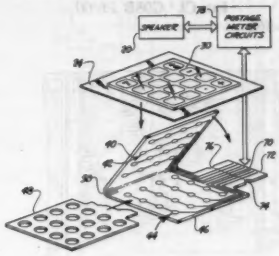
1. In a postage meter of the type adapted to imprint postage on a mail piece, a system comprising:

electronic circuit means for controlling the operation of said postage meter, said circuit means including means for accounting for postage which has been printed;

a conductive housing supporting said circuit means said conductive housing having a recessed area adapted to receive a keyboard means;

a keyboard means including switch means for entering data into said circuit means to effectuate operation of said postage meter, said switch means secured to said housing recessed area and including a plurality of switches electrically connected to said electronic circuit means;

said keyboard means further including a conductive flexible sheet disposed above and forming a continuous conductive surface covering all of said plurality of switches, said flexible conductive sheet electrically connected to said housing and positioned above said recessed area and of size so that the margins of said conductive flexible sheet physically engage non recessed areas of said housing and



operable to enable a force applied to said conductive sheet to be transmitted to actuate a selected switch to affectuate operation of said postage meter.

4,336,530

THIN KEYBOARD WITH CHANGEABLE KEY INDICIA

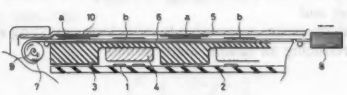
Mamoru Koike, Nara; Shigeki Komaki, Yamatokoriyama; Tomohiro Inoue, Yoshino; Akira Tanimoto, Kashihara, and Yoshisaburo Yoshida, Yaita, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 26,568, Apr. 3, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,257

Claims priority, application Japan, Apr. 6, 1978, 53-45488[U]

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 VL **7 Claims**



1. A substantially thin keyboard for use in a multifunction calculator, said keyboard comprising:

a frame;

a plurality of keys having at least first and second functions, said plurality of keys being spaced apart at a predetermined distance in a first direction and including,

a plurality of stationary key contacts positioned on said frame;

a plurality of electrically conductive movable contacts operatively associated with said stationary key contacts, each of said plurality of electrically conductive contacts being movable to bridge an associated one of said stationary key contacts;

an indicia sheet of relatively thin material having indicia imprinted thereon, each of said first and second functions of each key having an indicia associated therewith, said indicia being separated by less than said predetermined distance is said first direction;

a function selection switch for selecting the function of said plurality of keys, said function switch having at least a first position for selection of the first function and a second position for selection of the second function;

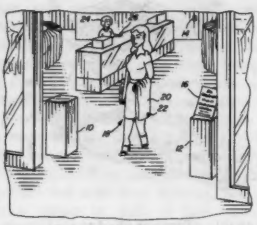
said function selection switch being operatively connected to said indicia sheet to shift said indicia sheet less than said predetermined distance in said first direction to place the indicia associated with the function selected into view; and

mask means for concealing from view indicia not associated with the function selected.

4,336,531
SHOPLIFTING ALARM SYSTEM AND METHOD

Robert A. Kincaid, 1201 N. Alvernon - #34, Tucson, Ariz. 85712

Filed Nov. 3, 1980, Ser. No. 203,535
Int. Cl.³ G08B 13/00
U.S. Cl. 340—568 9 Claims

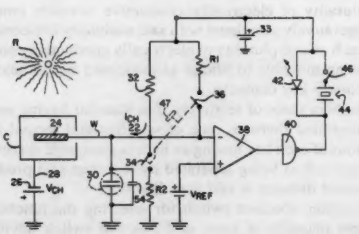


1. A shoplifting alarm/deterent system comprising in combination:
(a) a first pedestal-like housing means positioned in a store adjacent to one side of an exit of the store;
(b) a second pedestal-like housing means in the store positioned adjacent to an opposite side of the exit, said second pedestal-like housing means having an appearance substantially similar to the appearance of said first pedestal-like housing means;
(c) means for wirelessly transmitting a first signal indicating detection by an employee of shoplifting activity by a would-be shoplifter, said transmitting means including manually actuatable switching means for causing said transmitting means to transmit said first signal;
(d) receiving means concealed in said second pedestal-like housing means for receiving said first signal and producing an alarm actuating signal in response to said first signal; and
(e) alarm means responsive to said alarm actuating signal for producing an audible alarm sound.

4,336,532
INTEGRATED NUCLEAR RADIATION DETECTOR AND MONITOR

Brian L. Biehl, Adelphi, and Stuart I. Lieberman, Silver Spring, both of Md., assignors to Radiation Engineering Inc., Beltsville, Md.

Filed May 22, 1980, Ser. No. 152,273
Int. Cl.³ G01T 1/16; G08B 21/00
U.S. Cl. 340—600 7 Claims

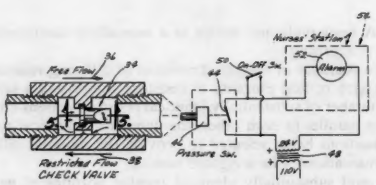


1. An integrated nuclear radiation detector and monitor comprising in combination:
means constituting an ionization chamber (C) including walls defining said chamber;
an electrode (24) positioned inside said chamber and electrically insulated from said chamber;
means for maintaining a potential (V_{CH}) between said electrode and said chamber so that the current flowing from said electrode is equal to the saturation current of said ionization chamber for any given level of radiation;
an electrical circuit including a source of potential (33);
means interposed in the electrical circuit between said source of potential (33) and said electrode (24) providing a high resistance between said source of potential (33) and said electrode (24);
means producing an adjustable reference potential (V_{ref});
a comparator (38) one terminal of which is connected to said reference potential (V_{ref}) and another terminal of which is connected to said electrode (24) for comparing the reference voltage with the voltage at said electrode, thereby producing an output signal;
a solid state invertor (40) electrically connected to the output side of said comparator to receive said output signal; and
an alarm electrically connected to said solid state invertor and actuated by said output signal.

4,336,533
FLUID ACTIVATED ALARM DEVICE

Robert S. Wettach, 204 N. Main St., Mt. Pleasant, Iowa 52641

Filed Dec. 22, 1980, Ser. No. 219,315
Int. Cl.³ G08B 21/00
U.S. Cl. 340—666 10 Claims



1. A liquid activatable alarm pad for a hospital bed comprising:
a flexible pressure sensitive pad having means for containment of a flowable liquid, a liquid inlet and a liquid outlet line,
a check valve in communication with said outlet line, allowing free flow of said fluid out of said pad through said outlet line but restricted flow back through said outlet line to said pad,
a pressure sensitive switch in fluid communication with said check valve, said switch being normally open, and closing only when pressure against said switch is reduced,
said switch being connected to a circuit and a power source, and
said circuit being connected to a signal means which is electrically responsive to reduction in pressure caused by removal of pressure from said pad.

4,336,534
CONTROL GENERATOR FOR USE IN BROADCAST RECEIVER INCLUDING IMPROVED SIGNAL LEVEL INDICATOR

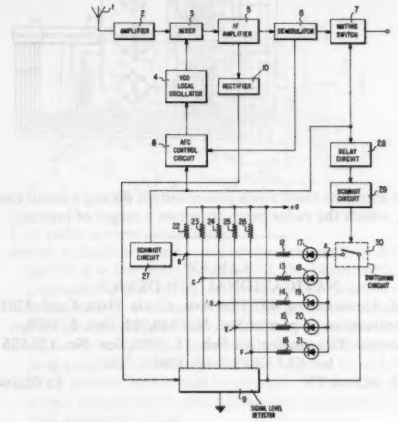
Morio Kumagai, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 53,714
Claims priority, application Japan, Jul. 17, 1978, 53-86966; Jul. 17, 1978, 53-98241[U]
Int. Cl.² G09G 3/00
U.S. Cl. 340—753 13 Claims

1. In a light-emitting level indicator which includes a signal level detector which sequentially provides a plurality of output signals at a respective plurality of output terminals thereof to thereby sequentially light luminous elements respectively connected to said output terminals in response to predetermined changes in the input signal applied to an input terminal of the

signal level detector so that the number of lit luminous elements indicates the magnitude of the input signal,

the improvement of converter means for converting arbitrarily selected changes in said input voltage to said predetermined changes where said arbitrarily selected changes are different from said predetermined changes so that said plurality of luminous elements can be sequentially lit in accordance with the arbitrarily selected changes in the input voltage where said converter means comprises only



passive elements including (a) a plurality of impedance means respectively connected to the output terminals of said signal level detector, the opposite terminals of said impedance means being connected to a common connection point, (b) a further impedance means connected between said common connection point and a fixed predetermined voltage and (c) means for connecting said common connection point to the said input terminal of the signal level detector.

4,336,535

CURSOR FOR PLASMA SHIFT REGISTER DISPLAY

Herman Albertine, Jr., Dallas, Tex., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 16, 1980, Ser. No. 140,649
Int. Cl.³ G09G *3/28*
U.S. Cl. 340—768 **21 Claims**

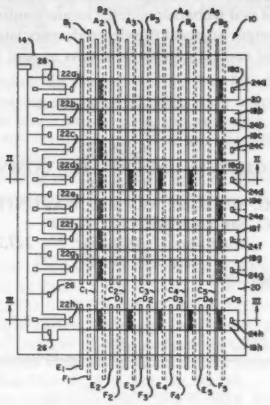
1. A plasma shift register display panel comprising:

at least one display channel defined by a front wall surface and an opposite rear wall surface and containing an ionizable medium;

a cursor channel defined by a front wall surface and an opposite rear wall surface, said cursor channel being positioned adjacent to said display channel and containing an ionizable medium;

a first plurality of transfer electrodes periodically positioned within said display channel;

a second plurality of transfer electrodes periodically positioned within said cursor channel; and



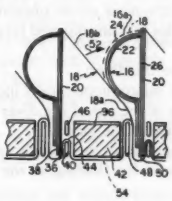
at third plurality of transfer electrodes periodically positioned within said display channel and within said cursor channel.

4,336,536

REFLECTIVE DISPLAY AND METHOD OF MAKING SAME

Charles G. Kalt, 29 Hawthorne Rd., Williamstown, Mass. 01267, and Bryce Babcock, 1025 State Rd., North Adams, Mass. 01247

Filed Dec. 17, 1979, Ser. No. 103,995
Int. Cl.³ G09G *3/16*
U.S. Cl. 340—783 **15 Claims**



1. A multi-element reflective display device, comprising:

(a) a plurality of shielding means positioned at spaced intervals with respect to each other, each of said shielding means having a surface of first reflectivity;

(b) a plurality of conductive fixed electrodes, each of said fixed electrodes having a surface of second reflectivity, said second reflectivity being different from said first reflectivity, each of said fixed electrodes being positioned between adjacent shielding means with its surface of second reflectivity in facing relationship to a respective one of said surfaces of first reflectivity;

(c) a single sheet of conductive material defining a plurality of tongues, each of said tongues having a base portion and tip portion, said plurality of tongues being defined in a row;

(d) means for supporting said fixed electrodes and each of said shielding means in said facing relationship and for supporting each of said tongues with their tips between a surface of first reflectivity and its respective facing surface of second reflectivity and in spaced relationship to said surface of second reflectivity;

(e) first conductor means integral with said single sheet for connecting to all of said tongues; and

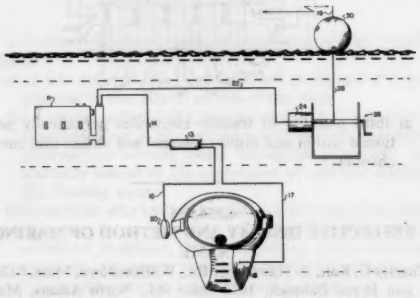
(f) a plurality of second conductor means for electrically connecting to each of said fixed electrodes, whereby application of a voltage to said first conductor means and one of said second conductor means results in attraction of the tongue adjacent the electrode associated with said one of said second conductor means to said associated electrode.

4,336,537

BI-DIRECTIONAL UNDERWATER COMMUNICATION SYSTEM

Fredrick G. Strickland, NAVSPECWARUNIT ONE Box 37, c/o FPO, San Francisco, Calif. 96651

Filed Dec. 17, 1980, Ser. No. 217,270
Int. Cl.[3] H04B *11/00*
U.S. Cl. 340—850 **5 Claims**



1. A system for bi-directional radio communication between a diver and a remote location comprising:

a separate watertight radio transceiver;

watertight microphone means operatively connected to the transceiver for transmitting and receiving voice communication;

a face mask for the diver;

the watertight microphone means including a separate earphone worn in the ear of the diver and a separate mouth piece mounted in the facemask;

buoyant antenna means operatively connected by a cable to the transceiver for floating at the surface of a body of water;

said buoyant antenna means including a buoy having top and bottom ends and an antenna which is mounted on the top of the buoy for extending upwardly therefrom above the water; and

reel means interconnected in the cable between the transceiver and the buoyant antenna means in proximity to the diver for reeling and unreeling the cable so that the antenna can remain above the surface of the water while the transceiver is submerged at various depths.

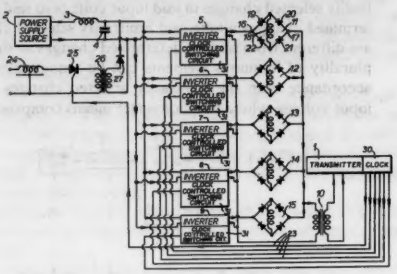
4,336,538

RADAR SYSTEMS

Matthew F. Radford, Danbury, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 21, 1976, Ser. No. 706,481
Claims priority, application United Kingdom, Jul. 26, 1975, 31374/75
Int. Cl.[3] G01S *7/02*
U.S. Cl. 343—5 R **2 Claims**

1. A radar system including a radar transmitter and a power supply connected to said radar transmitter, said power supply including a power source having means for selectively increasing the power supplied thereby to said radar transmitter to increase the average power output of the radar transmitter to



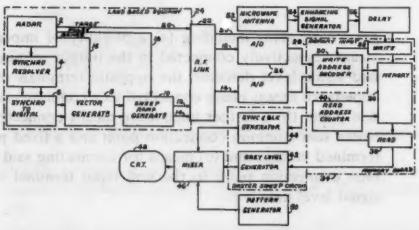
a value above its rated mean power output during a dwell time during which the radar beam traverses a target of interest.

4,336,539

NAVIGATIONAL AID DEVICE

Alvin E. Hendrickson, 457 Elm Ave., Chula Vista, Calif. 92010

Continuation-in-part of Ser. No. 948,702, Oct. 5, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,656
Int. Cl.[3] G01S *7/06*; H04N *7/12*
U.S. Cl. 343—6 TV **11 Claims**



1. A navigational aid device which comprises:

a radar station having a narrow beam antenna scanning an area traveled by at least one craft;

means for broadcasting over said area a signal carrying an instantaneous indication of the azimuthal orientation of the antenna, and a representation of the radar pulse and target echo timing;

on board said craft,

means for receiving said signal;

a digital storage means;

means for sequentially addressing said storage means;

means for randomly addressing said storage means in function of the sine and cosine components of said indication wherein the combined instantaneous values of sine and cosine components define the address locations in the storage means;

first means, responsive to said pulse and target echo timing, for writing information into said storage means in a location defined by the said instantaneous values at the time corresponding to the detection of said target echo by the radar station;

means for extracting said information from said storage means

by equal increments of said means for sequentially addressing;

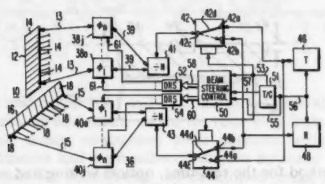
video means for displaying said information; and

means for synchronizing the raster scan sequence of said video means with said means for sequentially addressing.

4,336,540
RADAR SYSTEM

William V. Goodwin, Cinnaminson, N.J., and James S. Williams, deceased, late of Moorestown, N.J. (by Elizabeth J. Williams, executrix), assignors to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,664
Int. Cl.³ G01S *3/14*
U.S. Cl. 343—16 R **4 Claims**



1. A radar system comprising:

means including a first antenna for transmitting RF burst signals in a fan beam pattern with the beamwidth in one geometric plane being relatively wide relative to the beamwidth in a second orthogonal geometric plane;

means for receiving reflected RF burst signals, said receiving means including a receiving antenna of the type exhibiting a second fan beam pattern orthogonal to said first fan beam pattern where said beamwidth is relatively narrow in said one geometric plane relative to said second orthogonal geometric plane;

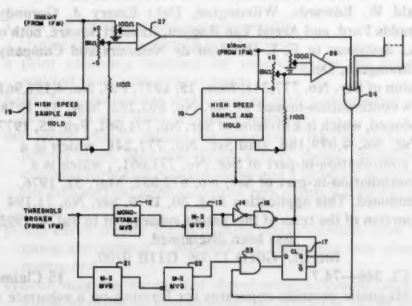
means coupled to said receiving antenna for scanning said second fan beam associated therewith in said one geometric plane, said means for scanning including means for sequentially stepping said second fan beam pattern over the region covered by said first fan beam pattern in said one geometric plane; and

means for repetitively transmitting said RF burst signals in said first fan beam pattern between each sequence step of said second fan beam.

4,336,541
SIMULTANEOUS SIGNAL DETECTOR FOR AN INSTANTANEOUS FREQUENCY MEASUREMENT RECEIVER

James B. Y. Tsui, Centerville; Rudy L. Shaw, Montgomery County, and Joseph Caschera, Riverside, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,434
Int. Cl.³ G01S *7/36*
U.S. Cl. 343—18 E **6 Claims**



1. An apparatus for detecting the receipt of two or more RF signals, differing in frequency and arrival time, in the video stage of an instantaneous frequency measurement receiver, comprising:

means for converting RF frequencies to proportional video stage voltage levels;

means for sampling the voltage levels, in the means for converting, upon stabilization of the video voltage levels immediately succeeding the reception of the first RF pulse;

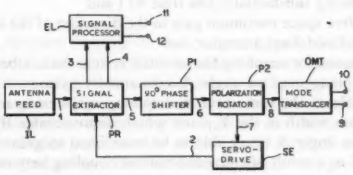
means for comparing the sampled video stage voltage levels with the video levels later in time, and providing an output signal when the levels later in time are not substantially equal to the sampled levels; and

means for terminating the comparison upon completion of the frequency measurement encoding by the receiver.

4,336,542
METHOD OF AND SYSTEM FOR TRACKING AN OBJECT RADIATING A CIRCULARLY OR LINEARLY POLARIZED ELECTROMAGNETIC SIGNAL

Paolo Bielli, Cirie-Torino; Salvatore De Padova, and Dario Savini, both of Turin, all of Italy, assignors to CSELT, Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Nov. 2, 1979, Ser. No. 90,618
Claims priority, application Italy, Nov. 6, 1978, 69540 A/78
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 PE **8 Claims**



1. A method of tracking a remote object emitting an electromagnetic radio signal, comprising the steps of:

receiving the emitted radio signal and passing same through a circular waveguide section capable of propagating modes TE_{11} and TE_{21};

extracting signal components of mode TE_{21} from said waveguide section via two pairs of diametrically opposite lateral slots located in axial planes mutually offset by 45° while transmitting a signal wave of mode TE_{11} to an output port;

subtractively combining the signal component extracted from each pair of slots to form a first and a second difference signal;

obtaining from the signal of mode TE_{11} arriving at said output port a reference signal of the same frequency as said difference signals; and

multiplying each of said difference signals by said reference signal to produce a pair of output signals proportional to spatial coordinates of said object in a predetermined Cartesian system having an axis coinciding with that of said waveguide section.

4,336,543
ELECTRONICALLY SCANNED AIRCRAFT ANTENNA SYSTEM HAVING A LINEAR ARRAY OF YAGI ELEMENTS

Frederick M. Ganz, Smithtown; Justine D. Cermignani, Fort Salonga, and Richard H. Imgram, Plainview, all of N.Y., assignors to Grumman Corporation, Bethpage, N.Y.

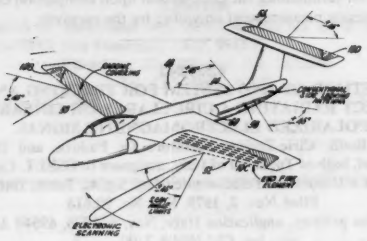
Continuation of Ser. No. 798,085, May 18, 1977, abandoned, which is a continuation of Ser. No. 618,401, Oct. 1, 1975, abandoned. This application Apr. 22, 1980, Ser. No. 142,772
Int. Cl.³ H01Q *1/28, 21/08*
U.S. Cl. 343—705 **15 Claims**

1. An antenna system for conformal mounting on an aircraft

for generating an electronically scanned main radiation lobe comprising:

(a) a linear array of Yagi antennas which are laterally spaced from one another a distance of about 0.3λ to 0.9λ center to center, each of said Yagi antennas including a driven element, a reflector member and a director member, each of which having a length less than the spacing between each adjacent Yagi antenna, each of said Yagi antennas being operative to radiate:

i. free space beam widths Bx and By in the coordinate X



and Y planes, respectively, the values of Bx and By being substantially less than 90°; and

ii. free space maximum gain in the direction of the lengths of said Yagi antennas; and

(b) means for scanning the antenna system main lobe in the X plane over an angle A substantially greater than Bx, while at the same time maintaining a system main lobe beam width in the Y plane which approximates By, said scan angle A being able to be broadened to greater than 90° as a result of enhanced mutual coupling between said Yagi antennas.

4,336,544

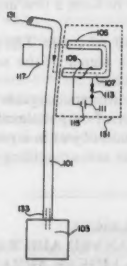
METHOD AND APPARATUS FOR DROP-ON-DEMAND INK JET PRINTING

David K. Donald, Redwood City; Michael J. Lee, and John L. Vaught, both of Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 18, 1980, Ser. No. 179,206

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **6 Claims**



1. An apparatus for performing ink jet printing comprising:

conduit means coupled to a fluid reservoir and having an orifice at an unaffixed end thereof for discharging a preselected drop of fluid from said orifice in response to interruption of the travel of said conduit means;

actuator means for causing the conduit means to travel along a preselected path in response to a first electrical signal; and

means for interrupting the travel of said conduit.

4,336,545

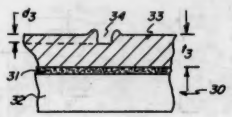
OPTICAL DISC STRUCTURE, METHOD AND APPARATUS PHYSICALLY OPTIMIZED FOR WRITING AND READING WITH A SINGLE WAVELENGTH

Dennis G. Howe, Pittsford; Alan B. Marchant, and Joseph J. Wrobel, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,646

Int. Cl.³ G01D *9/00, 15/34*

U.S. Cl. 346—1.1 **44 Claims**



23. A method for the real-time, optical writing and reading of high density information with light of a given wavelength, said method comprising:

(a) scanning a record element of the type having a recording stratum, including a heat-deformable dye-binder layer overlying a reflectively surfaced support, with respect to a writing laser beam of said given wavelength, said dye binder layer having optical constants such that the reflectance versus thickness variation curve of said stratum, with respect to said given wavelength, exhibits a first reflectance minimum having a high depth of modulation and said stratum having a nominal thickness sufficiently greater than the thickness corresponding to said first reflection minimum to effect reflection of a significant minor proportion of light of said given wavelength;

(b) modulating the intensity of said laser beam to form tracks comprising a plurality of discrete thermal deformation pits, said pits being recorded to a depth such that, upon reading of said record element with a reading laser beam of said given wavelength, the proportions of such beam reflected from pitted and non-pitted portions of said element are approximately equal;

(c) scanning such tracks with a reading laser beam of radiation of said given wavelength which has an energy less than will effect melting of the scanned dye-binder layer; and

(d) sensing the reading beam, reflected from said record element, with a far field detector adapted to detect and produce output signals primarily in response to differences in phase of the read beam reflected from pitted and non-pitted portions of said element.

4,336,546

MAGNETIC PRINTING APPARATUS

Donald W. Edwards, Wilmington, Del.; Emery J. Gorondy, Chadds Ford, and Arend Van Roggen, Kennett Square, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 777,241, Mar. 15, 1977, Pat. No. 4,191,961, and a continuation-in-part of Ser. No. 892,292, Mar. 31, 1978, abandoned, which is a division of Ser. No. 771,061, Feb. 25, 1977, Pat. No. 4,099,186, said Ser. No. 777,241, which is a continuation-in-part of Ser. No. 771,061, , which is a continuation-in-part of Ser. No. 672,552, Mar. 31, 1976, abandoned. This application Aug. 30, 1979, Ser. No. 71,194

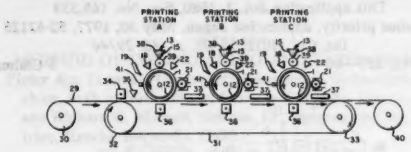
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.³ G01D *15/06;* G11B *9/00*

U.S. Cl. 346—74.7 **15 Claims**

1. Magnetic printing apparatus for forming on a substrate a colored print of an original colored design comprising a ferromagnetic printing means capable of continuously discharging an electric charge through its thickness to a grounded electrically conductive support on which it is imposed; means for

forming on said ferromagnetic printing means a magnetic image of a photocolor-separated film positive of the original colored design, means for developing said magnetic image on said ferromagnetic means with a toner comprising a ferromagnetic component, a dye and a resin which substantially encapsulates said component and dye; means for neutralizing static electricity on said toner; means for removing from said ferromagnetic means neutralized toner particles which prior to neutralization had been adhered thereto by static electricity; and means for transferring the developed image to the substrate.

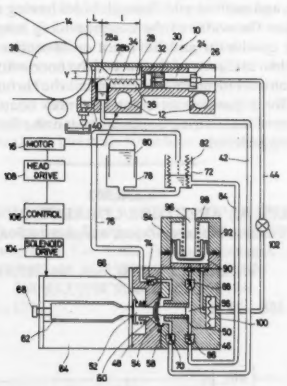


4,336,547

PUMP SYNCHRONIZATION IN AN INK JET SYSTEM PRINTER

Masafumi Matsumoto; Matahira Kotani, both of Nara, and Hiromu Sasaki, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1980, Ser. No. 186,349
Claims priority, application Japan, Sep. 28, 1979, 54-125793
Int. Cl.³ B41J *27/00*; G01D *15/02*
U.S. Cl. 346—75 **6 Claims**



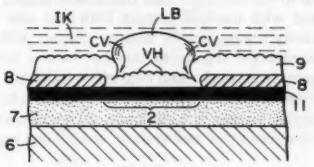
1. An ink jet system printer comprising:
a printer head for emitting ink droplets;
a print receiving member for receiving the ink droplets emitted from said printer head;
head drive means for reciprocating said printer head with respect to said print receiving member;
ink liquid supply means for supplying ink liquid to said printer head, said ink liquid supply means including a constant flow rate plunger pump and a pressure accumulator disposed between said flow rate pump and said printer head;
pump drive means for activating said constant flow rate pump comprising a solenoid for activating said plunger pump; and
synchronization means for developing a synchronization signal in order to synchronize the operation of the pump drive means with the operation of the head drive means so as to establish printing and non-printing periods, such that, during the actual printing period, the plunger pump is not driven to operate and said ink liquid supply is conducted through the use of the pressurized ink liquid contained in said pressure accumulator, while, during the non-printing period, said plunger pump is driven to increase the ink liquid pressure in said pressure accumulator.

4,336,548

DROPLETS FORMING DEVICE

Shigeyuki Matsumoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,531
Claims priority, application Japan, Jul. 4, 1979, 54-84851; Jul. 4, 1979, 54-84852; Jul. 9, 1979, 54-87146
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **27 Claims**



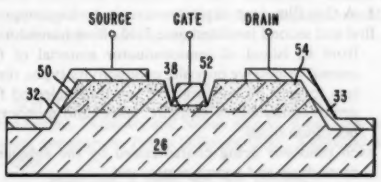
1. A droplets forming device comprising means defining a chamber into which a liquid is introduced, said chamber being in communication with a liquid droplets discharging orifice, and heat generating means provided in a surface of said chamber defining means for heating the liquid so that the thus heated liquid is discharged from the orifice in the form of droplets, said heat generating means including at least a heat generating resistive body and a barrier layer to isolate said resistive body from the liquid in said chamber, and wherein the surface of said barrier layer in contact with the liquid has a surface coarseness of from 0.05 S to 2 S measured in accordance with Japanese Industrial Standard JIS B 0601.

4,336,549

SCHOTTKY-BARRIER GATE GALLIUM ARSENIDE FIELD EFFECT DEVICES

Glenn O. Ladd, Jr., Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 879,651, Feb. 21, 1978, Pat. No. 4,265,934, which is a continuation of Ser. No. 640,124, Dec. 12, 1975, abandoned. This application Jul. 25, 1980, Ser. No. 172,325
Int. Cl.³ H01L *29/48*
U.S. Cl. 357—15 **6 Claims**



1. A Schottky-barrier gate field effect transistor comprising:
(a) a semi-insulating gallium arsenide substrate;
(b) a conducting channel selectively formed on said substrate;
(c) ohmic contacts formed on two chosen regions of the surface of said conducting channel to thereby form source

and drain electrodes and define source and drain regions for said field effect transistor;

(d) a relatively shallow conducting region of uniform thickness on said conducting channel, formed by selectively removing a predetermined portion of said conducting channel between said source and drain electrodes, to thereby form a trapezoidal shaped interval mesa cavity region in said conducting channel with the flat horizontal lower surface of said cavity region parallel to the interface between said substrate and said conducting channel, and angled side walls of said cavity region extending to said surface of said conducting channel at edges remote from said source and drain electrodes, and to thereby form the gate region for said Schottky-barrier gate field effect transistor; and

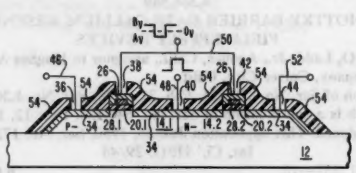
(e) a thin strip of metallization located between said source and drain electrodes, primarily covering said flat horizontal lower surface of said trapezoidal shaped cavity region and with minimal contact with said side walls of said cavity region, and in intimate contact with said shallow conduction region, to thereby form a Schottky-barrier gate electrode for said field effect transistor that is remote from said source and drain electrodes, whereby voltages applied to said gate electrode are operative to control the conductivity of said shallow conducting region.

4,336,550

CMOS DEVICE WITH SILICIDED SOURCES AND DRAINS AND METHOD

Lawrence B. Medwin, Edmonds, Wash., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,138
Int. Cl.³ H01L 27/02
U.S. Cl. 357—42 **2 Claims**



1. A thin film deep depletion circuit device comprising:

first and second insulated gate field effect transistors formed from an island of semiconductor material of first and second respective opposite conductivity types, the transistors formed on an insulative substrate selected from the group consisting of sapphire, spinel and monocrystalline beryllium oxide;

each transistor being characterized by the absence of discrete drain and source zones; and

each transistor further including;

a gate structure on only a portion of the surface of the island associated with each transistor and insulated therefrom;

shallow metal silicided areas on the remainder of the surface of the island adjacent each gate structure; and

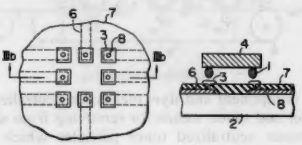
lead lines in ohmic contact with the silicided areas and with each gate structure.

4,336,551

THICK-FILM PRINTED CIRCUIT BOARD AND METHOD FOR PRODUCING THE SAME

Tsuyoshi Fujita; Tomio Yokoyama, and Ichiro Ishi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 909,941, May 26, 1978, abandoned.
This application Jul. 2, 1980, Ser. No. 165,333
Claims priority, application Japan, May 30, 1977, 52-62125
Int. Cl.³ H01L 39/02, 23/48, 29/44
U.S. Cl. 357—80 **5 Claims**



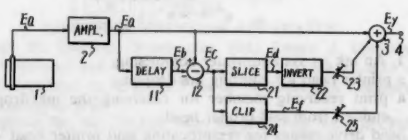
1. In a thick-film printed circuit board including a substrate of insulating ceramic material and a plurality of wiring conductors on said substrate for direct connection with a semiconductor chip, the improvement comprising a layer of insulating material arranged on said substrate to cover at least the connecting ends of said wiring conductors before connection with said semiconductor chip, said layer being providing with through holes at positions corresponding to said connecting ends of said wiring conductors, and a plurality of conductor pedestals filled in said through holes of said insulating layer and electrically connected with said wiring conductors, each of said conductor pedestals including a part of a predetermined area that extends on said insulating layer, the areas and shapes of said parts of said conductor pedestals being substantially uniform; and each of said through holes having a diameter that is less than the width of the corresponding connecting end of a wiring conductor and having a cross-sectional area that is smaller than said area of the part of the conductor pedestal that extends on said insulating layer so that the through holes compensate for a positioning error that may occur between the formation of said wiring conductors and the formation of said conductor pedestals.

4,336,552

VERTICAL APERTURE CORRECTION CIRCUIT

Sadaaki Tanaka, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,419
Int. Cl.³ H04N 9/535, 5/14
U.S. Cl. 358—21 R **17 Claims**



11. In a color image pickup device of the type which generates a video signal having a superimposed periodic, fluctuating index signal thereon resulting in periodic fluctuating levels of said video signal having a line-crawling effect on the video picture ultimately reproduced from said video signal, a vertical aperture correction circuit comprising delay means for imparting a relative delay to said video signal; means responsive to relatively delayed and undelayed video signals for emphasizing changes in brightness of the video signal from one horizontal scanning interval to the next and for emphasizing said periodic fluctuating levels; clipping means for passing those portions of the output of said means for emphasizing which exceed predetermined clipping levels; slicing means for passing that portion

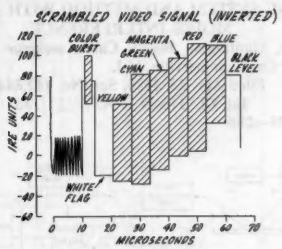
of said output of said means for emphasizing which lies between said predetermined clipping levels; and mixing means for mixing the video signal and the portions passed by said clipping and slicing means, whereby the portions passed by said slicing means are subtracted from the sum of the video signal and the portions passed by said clipping means.

4,336,553

METHOD OF CODING AUDIO AND VIDEO SIGNALS

Pieter den Toonder, Dordrecht; Johannes C. Seltenrijch, Gorichem, both of Netherlands; Graham S. Stubbs, Poway, Calif., and Richard G. Merrell, Hebron, Ill., assignors to Oak Industries, Rancho Bernardo, Calif.

Filed May 14, 1980, Ser. No. 149,706
Int. Cl.³ H04N 7/16
U.S. Cl. 358—120 11 Claims



1. Means for coding video and audio signals including means for deriving clock and internal timing signals from the video signal, means controlled by said internal timing signals for providing digital data representation of the audio signal,

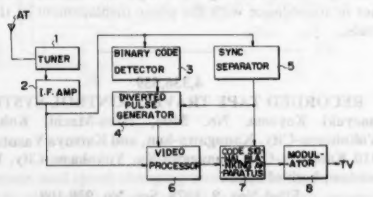
means for suppressing the video signal during horizontal blanking intervals, means for inserting the digital audio data in pulse form into the suppressed horizontal blanking intervals, and means for applying a changing voltage level to the video signal and audio data pulses during the horizontal blanking intervals to enhance video signal coding.

4,336,554

CODE SIGNAL BLANKING APPARATUS

Masataka Okada, and Toshimi Shiun, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,696
Int. Cl.³ H04N 7/16; H04K 1/04
U.S. Cl. 358—124 9 Claims



1. A code signal blanking apparatus which comprises:

a means for receiving a television signal with a code signal superposed thereon during a vertical blanking period;

a sync separator means for producing horizontal and vertical synchronizing signals from said television signal;

a pulse generating means for producing a code signal blanking pulse in response to said horizontal and vertical synchronizing signals;

a switching transistor means adapted to receive the television signal;

an output terminal for outputting the television signal through said switching means; and

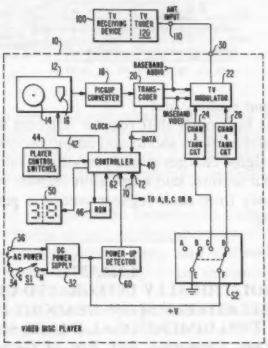
a gate means responsive to said horizontal synchronizing signal and said code signal blanking pulse for operating said switching means to supply a reference level to said output terminal through said switching means during a given period within the vertical blanking period, thereby blanking the code signal from the television signal.

4,336,555

VIDEO ACCESSORY HAVING CHANNEL IDENTIFIER

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,159
Int. Cl.³ H04N 5/76
U.S. Cl. 358—127 5 Claims



1. A video accessory for use with a television receiving means, said accessory comprising, in combination:

first switch means for applying operating power to said accessory;

signal source means for providing a baseband video signal;

modulator means, responsive to said baseband video signal, for producing a modulated carrier wave within a selected channel of a plurality of television channels for application to said television receiving means;

second switch means for applying a control signal to said modulator means for controlling selection of the television channel occupied by said carrier wave; and

channel prompting means in said accessory, responsive to initial closure of said first switch means and to a control signal manifestation produced by said second switch means, for producing a message perceptable to a user of said accessory, said message being indicative of the selected television channel of said modulator means for prompting the user to select the corresponding channel on said television receiving means.

4,336,556

SOLID-STATE IMAGE PICK-UP DEVICE

Hirokazu Sekine, Fujisawa, and Nobuo Suzuki, Kamakura, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 3, 1980, Ser. No. 155,974
Claims priority, application Japan, Jun. 8, 1979, 54-71280
Int. Cl.³ H04N 3/15
U.S. Cl. 358—213 4 Claims

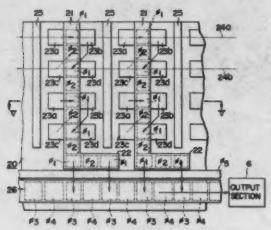
1. A solid-state image pick-up device comprising:

a semiconductor substrate;

a plurality of picture elements arranged for information transfer on said semiconductor substrate in vertical columns and horizontal scan lines, said picture elements

having a predetermined horizontal pitch interval and storing signal charges;

a plurality of shift registers arranged on said semiconductor substrate and extending vertically between two adjacent columns of picture elements for shifting said signal charges stored in said picture elements forming said adjacent columns, each of said plurality of shift registers including at one end a register section extending horizontally;



an output section; and

a single horizontal shift register adjacent to said horizontal register sections and to said output section for transferring said signal charges in said plurality of shift registers to said output section, said single shift register receiving simultaneously from each register section a pair of picture elements.

4,336,557

MONOLITHICALLY INTEGRATED CIRCUIT FOR RELATIVELY SLOW READOUT FROM A TWO-DIMENSIONAL IMAGE SENSOR

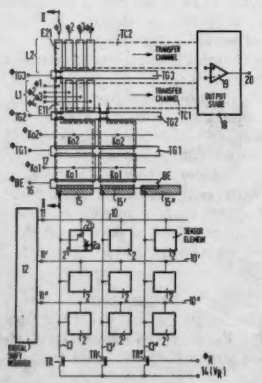
Rudolf Koch, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,258

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936703

Int. Cl.³ G11C *11/40*

U.S. Cl. 358—213 **20 Claims**



1. In a circuit monolithically integrated on a semiconductor substrate having a two-dimensional semiconductor image sensor with a plurality of sensor elements disposed in rows and columns, a plurality of column lines connecting all sensor elements in respective columns, a plurality of oppositely doped semiconductor regions respectively connected to said column lines for respectively generating charge packets corresponding to signals on said column lines, an output stage, a means for transferring charge to said output stage, a first storage capacitor supplied with a clock pulse voltage, a barrier element disposed between said first capacitor and said oppositely doped region, said barrier element supplied with a voltage for effecting transfer of charge from said oppositely doped region into said first storage capacitor, and a first transfer gate for transferring charge into said means for transferring charge to said output stage, the improvement of:

a second storage capacitor disposed between said barrier element and said first transfer gate, said second storage capacitor supplied with a clock pulse voltage for transferring charge into said second storage capacitor from said oppositely doped region after charge previously in said oppositely doped region is transferred to said first storage capacitor.

4,336,558

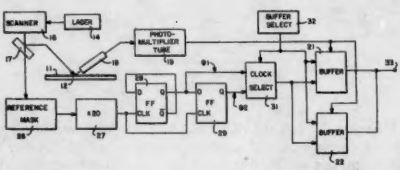
IMAGING SYSTEM AND METHOD WITH REDUCED MOIRE INTERFERENCE

Yung Lew, Huntington Beach, Calif., assignor to American Hoechst Corp., Somerville, N.J.

Filed Apr. 23, 1980, Ser. No. 142,884

Int. Cl.³ H04N *1/04, 7/12, 1/36*

U.S. Cl. 358—285 **6 Claims**



1. In a method of forming an image of an object on an output medium, the steps of: scanning the object along successive scan lines to provide a video signal representative of the object, scanning a reference mask concurrently with the object to provide a reference signal corresponding to the position of the scan, providing first and second clock signals in response to the reference signal, said clock signals being equal in rate and displaced from each other in phase, sampling the video signal for alternate ones of the scan lines in accordance with respective ones of the clock signals to provide output signals which are displaced in phase for adjacent ones of the scan lines, scanning a writing beam along successive lines on the output medium, and modulating the writing beam for alternate lines in accordance with respective ones of the output signals to form an image of the object on the output medium in which adjacent ones of the lines forming the image are displaced from each other in accordance with the phase displacement of the clock signals.

4,336,559

RECORDED TAPE TRAVEL CONTROL SYSTEM

Tsuneyuki Koyama, No. 5408, Hino-Machi, Kohnan-Ku, Yokohama-City, Kanagawa-ken, and Katsuya Yasutake, No. 410 Katakura-Cho, Kanagawa-Ku, Yokohama-City, Kanagawa-ken, both of Japan

Filed Nov. 9, 1978, Ser. No. 959,109

Claims priority, application Japan, Nov. 11, 1977, 52-135321

Int. Cl.³ G11B *15/48;* **H02P** *5/00*

U.S. Cl. 360—73 **6 Claims**

1. A tape travel control system comprising:

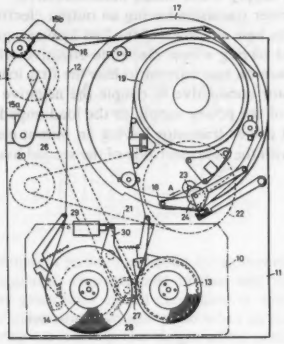
a motor and a capstan, said motor rotationally driving said capstan for transporting a tape;

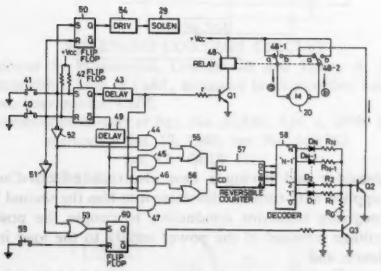
forward and reverse manipulation means for respectively generating forward and reverse signals responsive to a selective manipulation thereof;

rotational direction changing means selectively responsive to said forward and reverse signals for selectively chang-

ing the rotational direction of the motor in order to rotate the motor in a forward direction in response to the forward signal generated by manipulating the forward manipulation means and to rotate the motor in a reverse direction in response to the reverse signal generated by manipulating the reverse manipulation means;

speed changing means operating repeatedly in response to the number of the forward signals or the reverse signals which are generated by sequentially manipulating either the forward or the reverse manipulation means a plurality of times in a continuous succession, each of said manipulations changing the rotational speed of the motor in a step





manner, said speed changing means operating in response to the sequence of forward and reverse signals generated by alternately manipulating the forward and reverse manipulation means in order to decrease the rotational speed of the motor in a step manner, said rotational direction changing means and said speed changing means being operated responsive to the signals generated by the forward and the reverse manipulation means; and

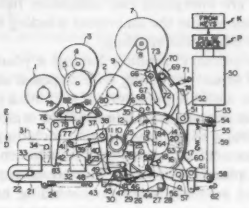
means for independently stopping the rotation of the motor, whereby said manipulation means may be operated to bring the tape to a desired location and then the independent stopping means may be operated to bring the tape to rest at that desired location.

4,336,560

PULSE-OPERATED MODE SWITCHING MECHANISM FOR TAPE RECORDERS

Sigeru Matsumoto, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 28, 1980, Ser. No. 134,990
Claims priority, application Japan, Mar. 30, 1979, 54-38006
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—137 **15 Claims**



1. A tape recording and reproducing apparatus having a plurality of manually operated keys for effecting various operations, an electromagnetic transducer, a motor, and a mode switching mechanism, said mode switching mechanism comprising:

a single solenoid energizable in response to pulses applied thereto of different durations dependent upon selective operation of said operating keys, said different pulses being respectively of relatively long, intermediate and relatively short durations;

a movable carrier member carrying thereon said electromagnetic transducer and movable between a first position wherein said transducer is displaced from a recording tape and a second position wherein said transducer fully contacts said recording tape;

a rotary wheel engageable through a drive gear with said motor, said rotary wheel revolving 360° from a predetermined angular position in response to energization of said solenoid;

means for moving said movable carrier member to said second position using rotational power of said rotary wheel when said solenoid is energized for substantially the long duration and moving said carrier member from said second position to said first position in response to subsequent energization of said solenoid; and

locking means movable a variable distance dependent upon the period of solenoid energization from an inactive position towards an active position for locking said carrier member in an intermediate position between said first and second positions to allow said transducer to make slight contact with said tape, whereby subsequent energization of the solenoid for substantially the intermediate duration causes said carrier member to move from said second position to said intermediate position to be locked therein and a subsequent energization of said solenoid for substantially the short duration causes said carrier member to move from said second or intermediate position to said first position.

4,336,561

SUPERCONDUCTING TRANSFORMER

John H. Murphy, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 116,328, Jan. 28, 1980. This application Mar. 13, 1981, Ser. No. 243,325
Int. Cl.³ H01F *27/00*
U.S. Cl. 361—19 **11 Claims**

1. A superconducting transformer comprising:

a main primary winding having a plurality of turns formed of

superconducting wire and adapted for connection to an external alternating energizing source;

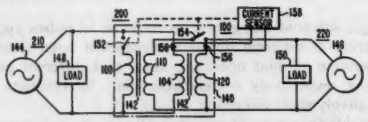
a main secondary winding including at least two serially connected concentrically adjacent layers each having a plurality of turns formed of superconducting wire, said main secondary winding being adapted for connection to an external load;

said main secondary winding being disposed adjacent to and concentric with the periphery of said main primary winding, such that when said main primary and main secondary windings are energized two minimum field regions are created, one within the innermost winding and one external to the outermost winding;

an auxiliary primary winding having a plurality of turns formed of superconducting wire disposed adjacent to and concentric with the periphery of said main primary winding, within one of said minimum field regions;

and an auxiliary secondary winding including at least two serially connected, concentrically adjacent layers each having a plurality of turns formed of superconducting wires, said auxiliary secondary winding being disposed adjacent to and concentric with the periphery of said main secondary winding, within the remaining of said minimum field regions;

said main primary and main secondary windings being sized to carry normal operating currents of said transformer;



said auxiliary primary and secondary windings being sized to carry predetermined fault and overload currents of said transformer;

said auxiliary primary winding being connected in parallel with said main primary winding, and said auxiliary secondary winding being connected in parallel with said main secondary winding;

said auxiliary primary and secondary windings having a predetermined radial spacing relative to the main primary and secondary windings respectively, selected to provide different impedance paths, such that negligible current flows in the auxiliary primary and secondary windings until predetermined currents are exceeded in the main primary and secondary windings, at which time the impedance of the main primary and secondary windings increases to cause the auxiliary primary and secondary windings to carry the excess current;

said main secondary winding layers having a predetermined radial spacing relative to said main primary winding selected to cause said superconducting transformer to have a lower input impedance when current flows in said main primary and secondary windings, and said auxiliary secondary winding layers having a predetermined radial spacing relative to said auxiliary primary winding selected to cause the input impedance of said superconducting transformer to increase when current flow increases in said auxiliary primary and secondary windings.

4,336,562

H-SWITCH HAVING SHORT TO PLUS PROTECTION

Thomas W. Kotowski, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 237,283
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—88 **2 Claims**

1. A switching circuit having short circuit protection comprising:

a power supply having positive and negative voltage terminals;

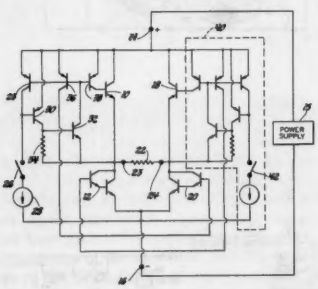
a load impedance;

a first load energizing transistor having emitter and collector electrodes coupled between one side of the load impedance and the negative voltage terminal of the power supply and having a base electrode;

a second load energizing transistor having emitter and collector electrodes coupled between the other side of the load impedance and the positive voltage terminal of the power supply and having a base electrode, the second load energizing transistor providing isolation between the load impedance and the positive voltage terminal of the power supply when biased nonconductive;

a first driver transistor having an output electrode coupled with the base electrode of the first load energizing transistor and having a base electrode effective when supplied with turn-on bias current to bias the first load energizing transistor conductive to couple the negative voltage terminal of the power supply to the load impedance;

a second driver transistor having an output electrode coupled with the base electrode of the second load energizing



transistor and having a base electrode effective when supplied with turn-on bias current to bias the second load enegizing transistor conductive to couple the positive voltage terminal of the power supply to the load impedance; and

means effective to selectively energize the load impedance, said last-mentioned means including an NPN transistor having a collector coupled with the base electrodes of the first and second driver transistors, an emitter electrode coupled to the load impedance and a base electrode, and means effective to selectively supply current from the positive voltage terminal of the power supply to the base electrode of the NPN transistor to selectively energize the load impedance, whereby when the first and second load energizing transistors are deenergized and the load impedance is normally isolated from the positive voltage terminal by the second load energizing transistor, a short between the load impedance and the positive voltage terminal of the voltage supply is effective to short the base and emitter electrodes of the NPN transistor to inhibit conduction of all of the transistors and provide short circuit protection for the first load energizing transistor.

4,336,563
OVERCURRENT PROTECTION CIRCUIT FOR INVERTER

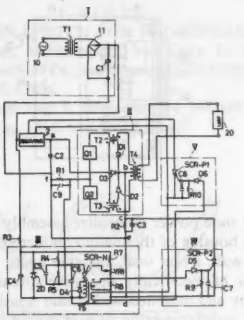
Masakazu Suzuki, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Aug. 26, 1980, Ser. No. 181,664

Claims priority, application Japan, Aug. 28, 1979, 54-118624[U]

Int. Cl.³ H02H *3/00, 7/122*

U.S. Cl. 361—93 **3 Claims**



1. An overcurrent protection circuit for an inverter having a switching regulator, characterized in that said circuit comprises a pulse generation circuit connected to said switching regulator for generating a trigger pulse when an input current of said inverter exceeds a preset value, a first conduction circuit provided across said input current to said inverter and responsive to said trigger pulse from said pulse generation circuit to instantaneously shut off said input current to said inverter when said pulse generation circuit generates a trigger pulse and a second conduction circuit coupled to said switching regulator and responsive to said trigger pulse from said pulse generation circuit to instantaneously shut off a driving signal of said switching regulator when said pulse generation circuit generates a trigger pulse.

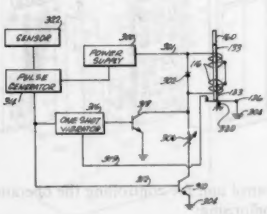
4,336,564
SOLENOID CONTROL CIRCUIT

Waldemar S. Wisniewski, Orangevale, and Henry S. More, Carmichael, both of Calif., assignors to Exploration Logging, Inc., Sacramento, Calif.

Continuation-in-part of Ser. No. 26,881, Apr. 4, 1979. This application Jul. 17, 1980, Ser. No. 169,763

Int. Cl.³ G01V *1/14*

U.S. Cl. 361—154 **5 Claims**



1. A circuit comprising:

(a) a source of electrical power having a pair of output terminals;

(b) a solenoid winding;

(c) an armature mounted adjacent the winding to move when an electric current passes through the winding;

(d) a first switch arranged to connect the winding across the terminals through a first path of relatively low electrical impedance;

(e) a second switch arranged to connect the winding across the terminals through a second path of relatively high electrical impedance;

(f) a long-pulse generator having an input and an output;

(g) a short-pulse generator having an input and an output;

(h) means connecting the long-pulse generator output to the input of the short-pulse generator and to the second switch;

(i) means connecting the short-pulse generator output to the first switch;

(j) means for activating the long-pulse generator to apply a relatively long pulse to the short-pulse generator input and to the second switch, whereby the first switch is made conducting for the duration of a short pulse from the short-pulse generator, and the second switch is made conducting for the duration of the long pulse;

(k) means for sensing the movement of the armature; and

(l) means responsive to armature movement for terminating the output of the short-pulse generator to interrupt the current through the first path.

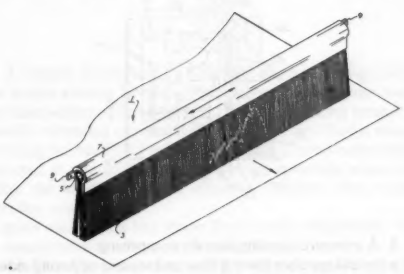
4,336,565
CHARGE PROCESS WITH A CARBON FIBER BRUSH ELECTRODE

Hugh Murray, and Lawrence M. Marks, both of Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,783

Int. Cl.³ G03G *13/02*

U.S. Cl. 361—225 **7 Claims**



1. A process for applying an electrostatic charge on the electrically insulating surface of a moving web which comprises contacting the surface with at least one brush electrode raised to an applied potential, said brush electrode being made with electrically conductive carbon fiber filaments, and oscillating said at least one brush electrode in a direction transverse to the direction of the web movement.

4,336,566
VEHICLE SPEED CONTROL SYSTEMS

John Noddings, Coventry, and Roland K. Borton, Rugby, both of England, assignors to Associated Engineering Limited, Leamington Spa, England

Filed Jul. 24, 1980, Ser. No. 171,973

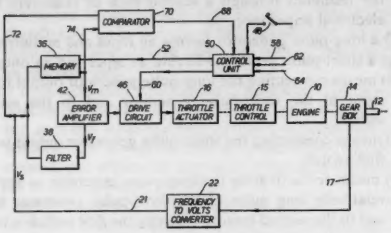
Claims priority, application United Kingdom, Aug. 3, 1979, 7927128

Int. Cl.³ B60K *31/00*

U.S. Cl. 361—242 **16 Claims**

1. A vehicle speed control system arranged when rendered operative to control the engine of the vehicle so as to tend to hold the vehicle to run at a desired speed, and disabling means responsive to the speed of the vehicle and the desired speed to

render the system inoperative when the actual vehicle speed exceeds the desired speed by more than a predetermined



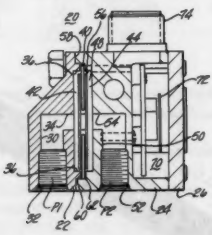
amount and when the actual vehicle speed falls below the desired speed by more than a predetermined amount.

4,336,567

DIFFERENTIAL PRESSURE TRANSDUCER

Harry G. Anastasia, Hillsdale, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Jun. 30, 1980, Ser. No. 164,758
Int. Cl.³ G01L *9/12*
U.S. Cl. 361—283 **24 Claims**



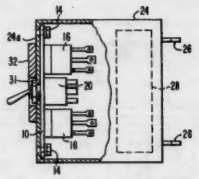
1. A pressure sensing capsule comprising:
a central member having first and second opposing sides and an opening therethrough;
first diaphragm means spaced from said first side and having a first pressure receiving surface thereon that is deformable in response to the pressure of a first media input thereto;
first annular sealing means interposing said first side and said first diaphragm means, and located in surrounding relationship to said opening for peripherially sealing said first diaphragm means to and for spacing said first diaphragm means from said central member;
second diaphragm means spaced from said second side and having a second pressure receiving surface thereon that is deformable in response to a second media input thereto;
second annular sealing means, interposing said second side and said second diaphragm means and located in surrounding relationship to said opening for peripherally sealing said second diaphragm means to said second side of said central member;
electrode means attached to said central member and one of said first or second diaphragm means for transducing the pressure to be measured into a capacitive signal; and
first means slidably received through said opening for causing the motion of one diaphragm to . dependent upon the motion of the other.

4,336,568

PACKAGED SOLID STATE POWER CONTROLLER WITH SEPARABLE MOUNTING FOR A POWER SWITCHING DEVICE, AND METHOD OF ASSEMBLY

James T. Mitchell, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 24, 1980, Ser. No. 171,608
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **6 Claims**



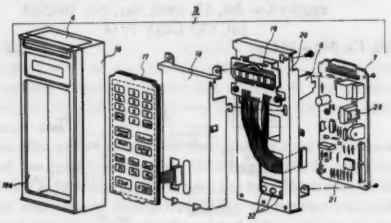
1. A solid state power controller assembly comprising:
a box-like housing of thermally conductive material having a front wall, a rear wall, and side walls;
a plurality of electrically operative circuit elements contained by and mounted within said housing;
means for interconnection of said circuit elements and for connection of said circuit elements with terminals extending through a wall of said housing;
said circuit elements including a solid state power switching device that is enclosed in a case;
a metal mounting plate that is a separate element from said walls of said housing;
said switching device case being bonded to a layer of electrically insulating and thermally conducting material which is bonded to said mounting plate; and
said mounting plate being joined by primary fasteners flat against the inner surface of said housing front wall.

4,336,569

CONTROL PANEL ASSEMBLY

Tatsuya Tsuda, and Yoshikatsu Ohno, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 25, 1979, Ser. No. 51,393
Claims priority, application Japan, Jun. 26, 1978, 53-77680
Int. Cl.³ H05B *6/66*; H05K *1/14*
U.S. Cl. 361—395 **5 Claims**



1. A control unit for controlling the operation of a cooking utensil, comprising:
a panel forming a front surface of the control unit and having a control means disposed thereon for introducing control instructions into said cooking utensil;
a printed wiring board forming a back surface of the control unit, said printed wiring board including circuit elements and a semiconductor chip device arranged thereon,
said circuit elements and said semiconductor chip device being mounted on a first surface of the printed wiring

board, the first surface facing the interior portion of the control unit; and

electrical connectors connecting the circuit elements and the semiconductor chip device together, said electrical connectors being supported on a second surface of the printed wiring board, the second surface being an opposite surface relative to the first surface and being an exterior surface of said control unit on the back surface thereof,

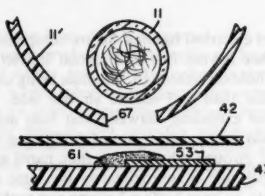
the second surface being substantially flat.

4,336,570

RADIATION SWITCH FOR PHOTOFLASH UNIT

Boyd G. Brower, Williamsport, and Gary L. Houseknecht, Hughesville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 9, 1980, Ser. No. 148,119
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—4 **10 Claims**



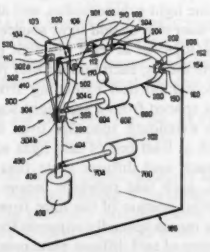
1. A radiation switch for a photoflash unit which is capable of conversion from a high electrical resistance to a low electrical resistance over a finite time interval when exposed to radiation emitted from a flashlamp disposed adjacent to the switch, said switch comprising an admixture of silver carbonate and/or silver oxide, silver-coated glass beads, and a binder, wherein the composition of the mixture is selected to provide a predetermined conversion time of about 12 milliseconds or greater.

4,336,571

CORRECTIVE DEVICE FOR THE ORIENTATION OF A HEADLIGHT OF A MOTOR VEHICLE

Charles H. Marchand, Drancy, France, assignor to Cibie Projecteurs, France

Filed Jun. 11, 1980, Ser. No. 158,500
Claims priority, application France, Jun. 20, 1979, 79 15800
Int. Cl.³ B60Q *1/12*
U.S. Cl. 362—60 **9 Claims**



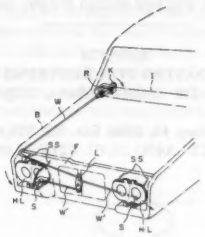
1. A corrective device for the orientation of a headlight on a motor vehicle wherein the headlight is mounted to rotate about a fixed horizontal axis on a suspended body of the vehicle, comprising an inertial pendulum movable in relation to the body and joined to a point on the headlight said point not being situated on said axis of rotation, a chassis suspended to pivot relatively to the body about a primary axis extending transversely of the body, first shock absorbing means fitted to the chassis for limiting swinging of the chassis in relation to the body, the inertial pendulum being suspended from the chassis and being pivotable about a secondary axis extending transversely of the body, second shock absorbing means fitted to the pendulum for limiting the movement of the pendulum in relation to the body, and said pendulum being joined to the headlight by the intermediary of a mechanical control link joined to the pendulum at the level of said primary axis.

4,336,572

REMOTE CONTROLLER AND MORE PARTICULARLY TO SLIDE MEMBER THEREOF

Yasunobu Takata, Odawara, Japan, assignor to Nissan Motor Company Limited and Ichiko Industries Limited, both of Tokyo, Japan

Continuation of Ser. No. 944,006, Sep. 20, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 131,179
Claims priority, application Japan, Sep. 26, 1977, 52-129671
Int. Cl.³ B60Q *1/06*
U.S. Cl. 362—66 **2 Claims**



1. A remote controller in a headlight beam adjusting device for a motor vehicle having a body and a headlight, the headlight beam adjusting device having pivotal mounting means for pivotally mounting the headlight on the vehicle body, means for biasing the headlight in one direction of tilt and cable means connected at one terminal thereof to the mounting means for pulling the headlight in the opposite direction, the remote controller comprising:

a guide case of box-like shape fixed to the vehicle body at a location remote from the headlight;

a box-like slide member mounted within said guide case for axial movement but against rotation with respect to said guide case, said slide member having one open axial side and an opposed cylindrically shaped axial inner wall provided with a threaded portion and an end connected to the other terminal of said cable means; and

a shaft rotably mounted within said guide case for rotation but against axial movement with respect to said guide case, said rotatable shaft having a threaded portion engaging said threaded portion of said slide member with respect to said guide case and thereby adjusting the tilt of the headlight.

4,336,573

ILLUMINATED SKATE

Leonard C. Carter, 1335 Willis St., Redding, Calif. 96001

Filed Jul. 16, 1980, Ser. No. 169,442
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—78 **7 Claims**

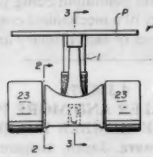
1. An illuminated skate such as a skateboard, roller skates, or the like having a person carrying platform, comprising in combination:

wheel support means depending from the platform and carrying wheels thereon including,

first and second bars depending from the platform and angulated to intersect and terminate remote from the platform,

an axle eminating from the intersection thereof transverse to a plane formed by said bars, said axle carrying said wheels,

battery means carried on and below the platform and illumination means operatively connected to said battery means



below the platform whereby when energized, said illumination means illuminates an area below the platform,

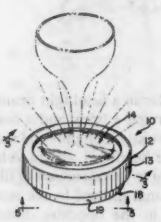
wherein said illumination means comprises an elongate shroud having an upwardly extending slot therein, walls of said slot frictionally engaging said axle, and light means in said shroud, and said shroud is light transmitting.

4,336,574

LIGHTED COASTER FOR DRINKING GLASSES

Donald Goodman, 258 Roger Williams, Highland Park, Ill. 60035

Filed Aug. 19, 1980, Ser. No. 179,494
Int. Cl.³ A47G *23/03*; F21V *33/00*
U.S. Cl. 362—101 **11 Claims**



1. A lighted coaster for drinking glasses and adapted to be lighted when supporting a glass and be off when not supporting a glass, the improvement comprising:

a base;

light means positioned within the base;

current carrying first contact means supporting the light means and including first, movable connector means associated with the light means and movable between an off and on position;

second, electrical connector means located in alignment with the light means and spaced therefrom when the coaster is not supporting a glass;

a battery with circuit means connected with both the first movable connector means and the second connector means to power said light;

a cover;

said cover including a non permeable top providing a glass supporting lense means;

guide means interconnecting the base and cover and including locking means and means to allow limited relative vertical movement between the cover and base yet prevent the cover from being unintentionally removed from the base when lifted;

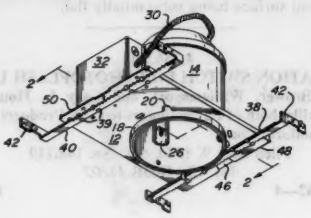
said first contact means providing biasing means for urging the first movable connector means to the off position away from the second connector means and thereby lift said cover when said glass is removed from the coaster.

4,336,575

BREAKAWAY PLASTER FRAME

Lester Gilman, South Hampton, Pa., assignor to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.

Filed Sep. 4, 1980, Ser. No. 183,877
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—147 **10 Claims**



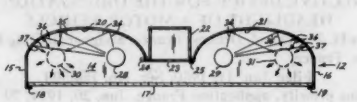
5. A recessed electrical lighting fixture comprising a rectangular metal plate having first and second shorter sides, said plate having a hole therethrough, said hole being closer to said first shorter side than said second shorter side, an integral breakaway zone extending between said hole and said first shorter side, said zone when removed facilitating introducing the frame plate through a hole in a ceiling panel and wherein the ceiling panel hole is approximately the same size as said hole in said plate, an open bottom housing removably mounted on said plate coaxial with the plate hole and being of a size so that it may extend entirely through said plate hole from below the plate, said housing having an electrical receptacle for receiving an electric bulb, a box on said frame, a prewired cable extending from said box to said receptacle.

4,336,576

LIGHTING APPARATUS

Daniel B. Crabtree, 10426 Moorberry, Houston, Tex. 77043

Filed Apr. 7, 1980, Ser. No. 138,215
Int. Cl.³ F21V *7/02*
U.S. Cl. 362—240 **26 Claims**



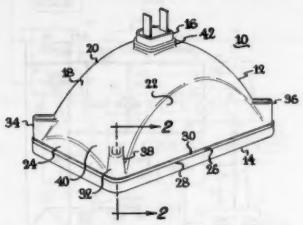
11. Lighting apparatus, comprising at least one reflector means, at least one light source means, and at least one diffuser plate means, at least one of said light source means being supported spacedly adjacent at least one first portion of each of said diffuser plate means, each said diffuser plate means having at least one second portion extending from each said first portion laterally spaced from a said light source means, a said reflector means extending spacedly over each said diffuser plate means with at least one of said light source means spacedly between each said diffuser plate first portion and said reflector means, each said reflector means being adapted to reflect a substantial portion of the light from one side of each said light source means spacedly adjacent thereto toward each said second portion of said diffuser plate means extending from the first portion of said diffuser plate means adjacent the other side of said light source means, whereby each said diffuser plate means is principally illuminated at each said first portion thereof by direct light from said light source means spacedly adjacent thereto and is principally illuminated at each said second portion thereof by reflected light from said light source means, the illumination of said first and second portions of each said diffuser plate means being substantially equal.

4,336,577

MOUNTING PADS FOR PLASTIC PAR LAMP

James M. Hanson, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,910
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 2 Claims



1. A reflector lamp which comprises:

(a) a rectangular shaped plastic reflector having a parabolic shaped cavity that includes opposing generally parallel planes which intersect the parabolic contour and terminate in an outer sealing rim, receptacle means disposed on the rear side of said reflector which accommodates a prefocused mount construction to locate a tungsten halogen lamp at the focus of said reflector, and mounting pads on the rear side of rectangular shape in the sealing rim region, said mounting pads having a completely hollow construction to avoid deformation of the parabolic cavity when said reflector member is formed, said mounting pad terminating in an open ended manner on the rear side of said reflector,

(b) a rectangular shaped plastic lens sealed to front surface of the sealing rim of said reflector, and

(c) a prefocused light source mount sealed to the receptacle means of said reflector, said prefocused tungsten halogen lamp mount comprising at least two lead wires, at least two electrical connecting means joined one each to said lead wires, a hollow plastic block having mating parts defining a cavity for receiving said joined lead wires, an elastomeric polymer in the cavity of said block to provide a leak-proof seal, wherein the mating parts of said block comprise an inner container member defining said cavity and fitted into an outer housing member, said inner and outer members being sealed together after assembly to form a leak-proof enclosure, and said tungsten halogen lamp is externally connected to the end of said lead wires nearest to the focus of the reflector.

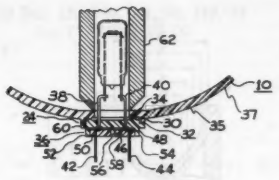
4,336,578

PLASTIC PAR LAMP CONSTRUCTION WITH REINFORCED RECEPTICLE AREA

Irving Bradley, Novelty, and Vincent Vodicka, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,912
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 1 Claim

1. In a rectangular shaped plastic reflector lamp comprising a plastic reflector member having a parabolic shaped cavity, one pair of opposing generally parallel planes which intersect the parabolic cavity to form the longer sides of said rectangular shape, a second pair of opposing generally parallel planes which intersect the parabolic cavity to form the shorter sides of said rectangular shape, all said planes terminating at a rectangular shaped sealing rim, receptacle means disposed on the rear side of said reflector which accommodates a prefocused plastic mount construction to locate a tungsten halogen lamp at the focus of said reflector and with said prefocused mount being sealed directly to the receptacle means of said reflector, said prefocused mount including at least two lead wires, at least two electrical connecting means joined one each to said lead wires, a hollow plastic block having mating parts defining a cavity for receiving said joined lead wires, an elastic polymer in the cavity of said block to provide a leak proof seal around the lead wires, wherein the mating parts of said block comprise an inner container member defining said cavity and fitted into an outer housing member, said inner and outer members being sealed together after assembly to form a leak proof enclosure,



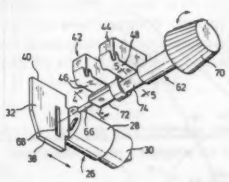
and said tungsten halogen lamp being externally connected to the end of said lead wires nearest to the focus of the reflector, the improvement wherein the wall thickness of the parabolic shaped cavity is sufficiently greater in the apex region of said parabolic cavity in a circular area commencing at the edge of the receptacle means and extending radially outward therefrom to avoid mechanical and heat distortion when the prefocused mount is sealed to the reflector as well as during subsequent lamp operation.

4,336,579

LAMP ASSEMBLY WITH SWITCH AND FOCUSSING MECHANISMS

Ronald D. Lord, Willowdale, Canada, assignor to Mining Industry Research Organization of Canada, Toronto, Canada

Filed Sep. 22, 1980, Ser. No. 189,239
Int. Cl.³ F21V 21/26
U.S. Cl. 362—272 6 Claims



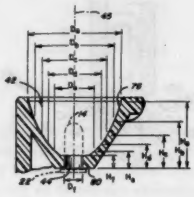
1. A lamp assembly comprising a housing having opposed grooves, a lamp bulb carrier having opposite edges slidably mounted in the opposed grooves of the housing for reciprocating movement along the optical axis of the lamp bulb, an actuator mounted in the housing for angular movement about an axis substantially perpendicular to the optical axis of the lamp bulb, said actuator having an eccentric portion projecting into an opening in the lamp bulb carrier, the opening having side walls engageable by the eccentric portion of the actuator to effect reciprocation of the lamp bulb carrier when the actuator is angularly moved, and a first switch carried by the housing connected to the lamp bulb and connectable to an electrical power supply, said actuator also having first cam means which engages and actuates the first switch over a first predetermined range of angular movement of the actuator to cause the lamp to be illuminated while the lamp is reciprocated along its optical axis.

4,336,580

ALPHA-NUMERIC DISPLAY ARRAY AND METHOD OF MANUFACTURE

Arthur A. Mouyard, Glendale Heights; Michael V. Hamby, Chicago, and Paul A. Tomaszek, Des Plaines, all of Ill., assignors to General Instrument Corporation, Clifton, N.J.

Division of Ser. No. 936,728, Aug. 25, 1978, Pat. No. 4,254,453.
This application Oct. 14, 1980, Ser. No. 196,451
Int. Cl.³ F21V 7/00
U.S. Cl. 362—347 9 Claims



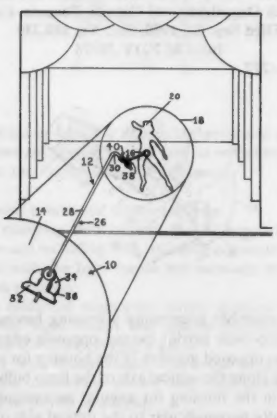
1. A generally dish shaped reflector cavity having a reflector surface comprising means for collimating light emanating from a series of points along the central axis of the reflector cavity, said collimating means comprising a predetermined surface characteristic of said reflector surface including a plurality of parabolic surfaces having different foci and being arranged in the same order as their respective foci are arranged along said central axis.

4,336,581

FOLLOW SPOT SIGHTING DEVICE

Albert W. Morris, Jr., 2700 Connecticut Ave., Washington, D.C. 20008

Filed May 15, 1980, Ser. No. 150,161
Int. Cl.³ F21S 17/00; F21P 5/00
U.S. Cl. 362—457 18 Claims



1. In combination, a theatrical follow spotlight capable of being directed toward a moving performer or an object in order to throw a beam of light on the moving performer or object and a theatrical follow spotlight sighting device mountable on the spotlight to allow the spotlight to be positioned to controllably throw the beam of light on said moving performer or object, the sighting device comprising:

means for following a performer in motion to enable alignment of the theatrical follow spotlight with the moving performer; and,

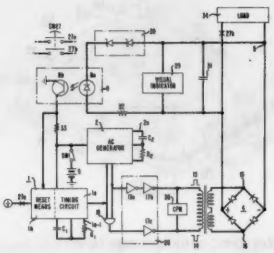
means for mounting the following means on the spotlight.

4,336,582

ENERGY SAVING DC-DC CONVERTER CIRCUIT

William C. Brantley, Allentown, N.J., and John E. Edington, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1980, Ser. No. 132,166
Int. Cl.³ H02M 3/22
U.S. Cl. 363—15 10 Claims



1. A regulated DC-DC converter circuit of the type adapted to develop a continuously increasing direct current voltage across a direct current voltage storage means (31) upon the presentation of a direct current voltage to the input of the DC-DC converter circuit

Characterized by

energy conserving means (30, 8, 1) connected across the voltage storage means (31) and adapted to inhibit the presentation of the input direct current voltage for a selectable voltage cut-off interval (t_1) when the stored direct current voltage exceeds a predetermined value (L), the energy conserving means comprising:

means (30) comprising a plurality of reference voltage diodes for detecting when the stored direct current voltage exceeds a predetermined value,

activation means (8) comprising an opto-isolator circuit responsive to the detection means and

means (1), responsive to the activation means (8), for inhibiting the presentation of the direct current voltage to the input of the DC-DC converter circuit for the selectable voltage cut-off interval (t_1).

4,336,583

CONTROLLED INDUCTIVE STORAGE DC-TO-DC CONVERTER

Stephen J. Campbell, Needham; Warren E. Hambly, West Bridgewater, and George C. Harrison, Chelmsford, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 15, 1980, Ser. No. 216,132
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 15 Claims

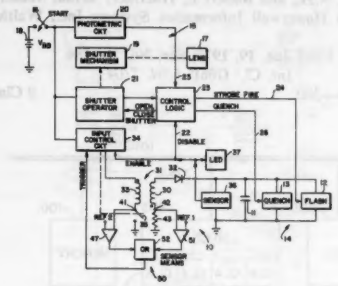
1. A DC-to-DC converter for charging a capacitor from a low-level DC power supply comprising:

a transformer having a secondary winding for connection to the capacitor, and having a primary winding;

an input control circuit for selectively connecting said primary winding to the DC power supply for a predetermined time interval in response to an input signal thereto whereby current flows in said primary winding establishing a magnetic field that stores energy and whereby at the end of said predetermined time interval the current flow in said primary winding is interrupted to cause the magnetic field to start to collapse and induce current to flow in said secondary winding so as to transfer energy from the field to the capacitor; and

first sensor means responsive to a variation in voltage indicative of the collapse of the magnetic field in said primary winding subsequent to the interruption of the current flow in said primary winding by said input control circuit for

providing a signal having a discontinuity at the instant the magnetic field collapses to zero and for signalling said input control circuit when the discontinuity occurs so that



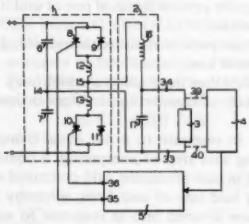
said input control circuit can again connect the power supply to said primary winding for said predetermined time.

4,336,584

AUTORESONANT STATIC CONVERTER

Giuseppe Careglio, Turin, Italy, assignor to WABCO Westinghouse Compagnia Freni S.p.A., Turin, Italy

Filed Mar. 28, 1980, Ser. No. 135,049
Claims priority, application Italy, Apr. 4, 1979, 67700 A/79
Int. Cl.³ H02M *3/315, 7/515*
U.S. Cl. 363—28 **4 Claims**



1. Static converter apparatus for transforming a direct current voltage from a source into another voltage of different level to supply a load with a predetermined voltage level, comprising,

(a) a static inverter network coupled to receive the direct current voltage from said source and operable for transforming that voltage into an alternating current voltage,

(b) control means coupled for driving said inverter network to normally produce said alternating current voltage at a selected frequency,

(c) an LC series resonant regulator circuit tuned to said selected frequency and coupled to receive said alternating current voltage from said inverter network and responsive for varying an output voltage level as the frequency shifts from said selected frequency,

(d) output means coupled across the capacitor element of said series regulator circuit for supplying said output voltage to said load, and

(e) a level detector means coupled to said output means for detecting variations of the supplied output voltage from said predetermined level and responsive thereto for generating a feedback signal representative of the variation,

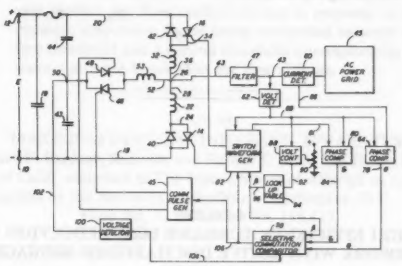
(f) said control means also coupled to said level detector means and responsive to reception of a feedback signal for shifting the frequency of the alternating current voltage produced by said inverter network so that said resonant regulator circuit varies said output voltage to adjust the load voltage to said predetermined level.

4,336,585

SELECTIVE COMMUTATION FOR AN INVERTER

Robert M. Moriarty, Ballston Spa, N.Y.; John W. Walton, Glastonbury, Conn., and Samuel C. Caldwell, Raleigh, N.C., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1980, Ser. No. 219,773
Int. Cl.³ H02P *13/00*
U.S. Cl. 363—79 **3 Claims**



1. A selective commutation circuit for use with an inverter which transforms DC electrical energy from a source providing a negative input and a positive input to AC electrical energy at an output node, comprising:

main switch means responsive to a control waveform for alternatively connecting said positive input to said output node, and connecting said negative input to said output node;

commutation means for providing a pulse of stored energy to displace that from said source to said output node at preselected times in response to commutation control pulses so that said main switch means can be transitioned to its nonconducting state; and

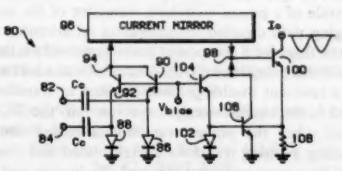
comparator means of sensing the phase relationship of preselected waveforms related to said inverter operation and for modifying said commutation control pulses in the event that said main switch means can be transition to the off state merely by the removal of a control pulse.

4,336,586

LINEAR FULL WAVE RECTIFIER CIRCUIT

Gerald K. Lunn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,329
Int. Cl.³ H02M *7/217*
U.S. Cl. 363—127 **6 Claims**



1. A full wave rectifier, comprising:

first rectifier means adapted to receive an alternating input signal at first and second inputs for producing an output signal that is a full wave rectified version of said alternating input signal;

current turnaround means responsive to said output signal from said first rectifier means for producing an output signal at an output substantially identical to said output signal from said first rectifier means;

second rectifier means coupled to said output of said current turnaround means having a substantially identical transfer characteristic to said first rectifier means; and

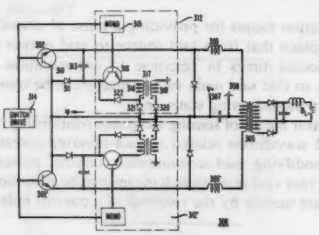
circuit means coupled between said output of said current turnaround means and said second rectifier means for providing feedback to said second rectifier means such that the signal appearing between said output of said current turnaround means and said second rectifier means is substantially an exact full wave rectified version of said alternating input signal.

4,336,587

HIGH EFFICIENCY TURN-OFF LOSS REDUCTION NETWORK WITH ACTIVE DISCHARGE OF STORAGE CAPACITOR

Charles W. Boettcher, Jr., R.D. 3 Box F-118, Cliffwood Rd., Chester, N.J. 07930, and Robert E. Schroeder, 4 Ramar St., Flanders, N.J. 07836

Filed Jun. 29, 1981, Ser. No. 278,354
Int. Cl.[3] H02M 7/537
U.S. Cl. 363—134 8 Claims



1. In combination; an inverter circuit including

first and second high efficiency turn-off loss reduction networks each coupled to reduce turn-off loss in first and second power switching transistors coupling a DC voltage source to a power transformer, each of the first and second turn-off loss reduction networks comprising;

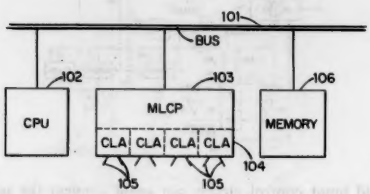
a charge storage capacitor coupled to a main conduction path electrode of a power switching transistor of the inverter, a charging path coupled for providing an alternate path for current flow from the power transformer when the power transistor is being biased from conduction to nonconduction, and a resonant discharge path coupled to transfer energy stored in the charge storage capacitor into the DC voltage source when the power transistor is biased conducting, including a gating transistor switch biased into conduction when the power transistor is biased conducting and coupled to deliver energy to an inductive storage medium, timing circuitry to bias the gating transistor switch nonconducting at a predetermined time interval, and a flyback discharge path coupling the inductive storage medium to the DC voltage source in order to discharge energy thereto when the gating transistor switch is biased nonconducting.

4,336,588

COMMUNICATION LINE STATUS SCAN TECHNIQUE FOR A COMMUNICATIONS PROCESSING SYSTEM

John H. Vernon, Milford, Mass.; John P. Grandmaison, Hampton, N.H., and Robert E. Huettner, Acton, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 19, 1977, Ser. No. 760,784
Int. Cl.[3] G06F 3/04, 7/04
U.S. Cl. 364—200 9 Claims



1. In a data processing system including a communications processor coupled by means of a plurality of line adapters to transmit or receive data between a plurality of communications lines, each having a present status, and a main memory upon issuance of interrupt signals, an indication of the prior status of said lines being stored in said processor, said main memory coupled in the system to store said data, said system further including a central processing unit coupled to communicate control information to said processor, a process implemented by said communications processor after said system responds to said interrupt signals as issued by said central processing unit or one of said line adapters comprising the steps of:

A. determining the present status of one of said lines selected by said processor;

B. comparing said present status with said stored prior status of said selected line;

C. scanning for other data sources which may require service if said step of comparing produces an equal comparison; and

D. executing, in response to a not equal comparison produced during said step of comparing, a command previously stored in said processor, said command enabling the servicing of said one of said lines, whereby line service operations are entered into in response to said interrupt signals only after the status of a line has changed.

4,336,589

WAREHOUSING MONITOR AND CONTROL SYSTEM

Charles A. Smith, and Robert T. Danevicz, both of Grand Rapids, Mich., assignors to Rapistan Division, Lear Siegler, Inc., Grand Rapids, Mich.

Filed Apr. 7, 1980, Ser. No. 138,250
Int. Cl.[3] G06F 15/24
U.S. Cl. 364—403 17 Claims

1. A system for monitoring and controlling the flow of articles in a warehousing system including a sorting conveyer with a plurality of discharge locations in which stored articles are to be batch picked and sorted for shipment comprising:

means for storing data representing each article to be picked, said data including a number assigned to each article which is unique to each article and sort destination information for each article;

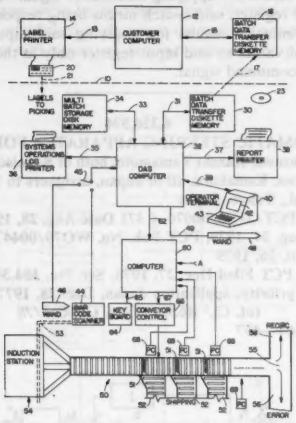
indicia mean associated with each article to be picked including said unique number;

scanning means for scanning said indicia means on an article transported within the warehousing system;

computer circuit means coupled to said data storing means and to said scanning means for correlating position information of each article with the article identification number;

display means coupled to said computer circuit means for providing display information to an operator of the status of each article to be picked and sorted;

a conveyer control circuit for selectively controlling the discharge of articles; and



means coupling said conveyer control circuit to said computer circuit means for controlling the diverting of articles in response to the correlation of their unique identification number with associated sort destination information stored in said data storing means.

4,336,590

DEVICES FOR CONTROLLING GAS FLOWS

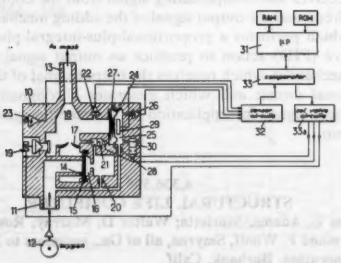
Georges Jacq, Maurepas, and Pierre Damico, Villepreux, both of France, assignors to Intertechnique, Plaisir, France

Filed May 1, 1980, Ser. No. 145,844

Claims priority, application France, May 2, 1979, 79 11072

Int. Cl.³ A62B *7/14*

U.S. Cl. 364—418 **10 Claims**



1. In a transportation aircraft, an apparatus for distributing oxygen to passenger breathing masks, comprising:

a source of oxygen under pressure;

an oxygen distribution line;

a first gas flow control device having an inlet connected to said source and an outlet connected to said distribution line;

a pressure reducer having an inlet connected to said source and adapted to deliver oxygen at a predetermined reduced pressure at an outlet;

a second gas flow control device having an inlet connected to the outlet of said pressure reducer and an outlet connected to said line;

each of said gas flow control devices having a servo-valve controlling communication between the inlet and the outlet thereof and a pilot two-position solenoid valve for controlling said servo-valve in response to a control signal;

sensor means for sensing the pressure in the cabin of the aircraft and delivering a signal responsive of said pressure; and

computer control means connected to receive said pressure responsive signal for delivering a control signal to the solenoid valve of said first gas flow control device in response to said pressure responsive signal being lower than a threshold corresponding to a first predetermined altitude and for delivering a temporary control signal to the solenoid valve of said first gas flow control device and then a continuous control signal to the solenoid valve of said second gas flow control device in response to said pressure responsive signal being comprised between said first threshold and a second threshold corresponding to a second altitude lower than the first altitude.

4,336,591

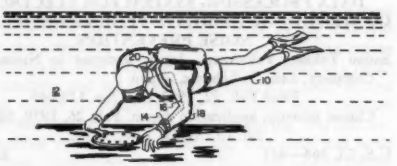
MAXIMUM DEPTH MONITORING APPARATUS

Peter F. Berdzar, Ramona, and Robert S. Acks, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 7, 1980, Ser. No. 166,413

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—418 **5 Claims**



1. An apparatus for diver safety comprising:

a package sized to be mountable upon a diver's wrist;

solid state electronic depth monitoring means for monitoring the maximum depth of a diver during the period that the diver is submerged being disposed in the wrist mountable package;

indicating means disposed in the wrist mountable package coupled to said depth monitoring means for enabling said diver to readily determine at any given time during said period his maximum depth of submergence; and

an audio alarm means coupled to said depth monitoring means for alerting said diver when said diver descends below a preselected critical maximum depth, said audio alarm comprising a bone conduction earphone means electrically connected to said package by a small conductor disposed inside a diver's wetsuit and extending between said earphone means and said package.

4,336,592

ANTISKID CONTROL SYSTEM FOR BRAKES WHICH EXHIBIT LARGE CHANGES IN LINING FRICTION COEFFICIENT

Arnold A. Beck, Clinton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 23, 1980, Ser. No. 161,812

Int. Cl.³ B60T *8/08*

U.S. Cl. 364—426 **11 Claims**

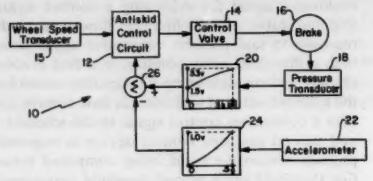
1. In an antiskid control system for a braked wheel vehicle wherein the system includes a brake on a wheel, a control valve regulating pressure at the brake, and a control circuit connected to the control valve and applying thereto an antiskid control signal, the improvement, comprising:

first means comprising a first amplifer having variable gain, said first means being connected to the brake for producing an output signal corresponding to the brake pressure at the brake;

second means connected to the vehicle for producing an output signal analogous to the torque of the brake;

summing means interconnected between said first and second means for receiving and summing said output signals therefrom; and

modification means for receiving both the antiskid control signal and the sum of said output signals from said summing means, said modification means modifying the antiskid control signal as a function of said sum and then supplying the modified antiskid control signal to the control valve.



4,336,593

DATA PROCESSING SYSTEM FOR ELECTRONIC CONTROL OF AUTOMOTIVE VEHICLE DEVICES WITH NOISE PREVENTION

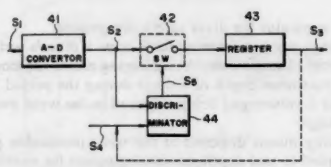
Sadao Takase, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Feb. 22, 1980, Ser. No. 123,649

Claims priority, application Japan, Feb. 26, 1979, 54-20773

Int. Cl.³ G06B *1/08, 15/02*

U.S. Cl. 364—431 **12 Claims**



7. A noise prevention device for use in a data processing system for an automotive vehicle electronic control, said system controlling automotive fuel injection, spark ignition timing, engine speed and other engine operating conditions, said device being operative to prevent the effects of noise generated by spark ignition and other engine functions from detrimentally affecting operation of said system, said device comprising:

an input unit having an input register temporarily storing inputted sensor signal values indicative of various engine operating parameters, said input register being capable of being updated with present sensor signal values in place of previous sensor signal values;

discriminator means for receiving inputted sensor signals and comparing successive sensor signal values with a predetermined first reference signal defining a varying input signal range to determine when said successive sensor signal values are in said input signal range; and, when said successive sensor signal values are outside of said input signal range, producing differences between said successive sensor signal values and comparing said differences with a second reference value defining an allowable difference range, and measuring the period of time during which said differences are maintained in said allowable difference range; said discriminator means comparing said measured period with a predetermined period and producing a command signal if said sensor signal values are out of said input signal range and said measured period is shorter than said predetermined period; and

switch means for applying said sensor signal values to said input register, said switch means being responsive to said discriminator means for applying said inputted sensor signal values to said input register only in the absence of said command signal.

4,336,594

AUTOMATIC STEERING APPARATUS FOR SHIPS

Isao Masuzawa; Kanshi Yamamoto, both of Kuroiso, and Yoichi Hirokawa, Kamakura, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

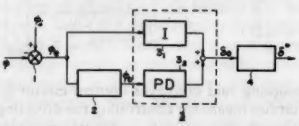
PCT No. PCT/JP78/00070, § 371 Date Aug. 28, 1979, § 102(e) Date Aug. 24, 1979, PCT Pub. No. WO79/00447, PCT Pub. Date Jul. 26, 1979

PCT Filed Dec. 27, 1978, Ser. No. 154,397

Claims priority, application Japan, Dec. 28, 1977, 52-160612

Int. Cl.³ B63H *25/04;* G06G *7/78*

U.S. Cl. 364—457 **8 Claims**



1. An automatic steering apparatus for ships comprising:

an adding mechanism for obtaining a deviation signal representing a difference between a predetermined course of a ship and the ship's heading, and providing an output signal; a compensating circuit for generating a compensating signal comprising an amplifying circuit which receives said deviation signal and having a gain which is increased when said deviation signal is in a small range which results in two stable steady turning conditions and thereby causing directional instability; an operational circuit which receives said compensating signal from the compensating circuit and the output signal of the adding mechanism, and which performs a proportional-plus-integral-plus derivative (PID) action to produce an output signal; a servomechanism which receives the output signal of the operational circuit and which generates a command rudder angle signal for application to the steering gear of said ship.

4,336,595

STRUCTURAL LIFE COMPUTER

Thomas E. Adams, Marietta; Walter D. Murray, Roswell, and Raymond F. Woolf, Smyrna, all of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 959,983, Nov. 13, 1978, abandoned, which is a continuation of Ser. No. 826,720, Aug. 22, 1977, abandoned. This application Jun. 26, 1981, Ser. No. 277,904

Int. Cl.³ G01M *5/00*

U.S. Cl. 364—508 **9 Claims**

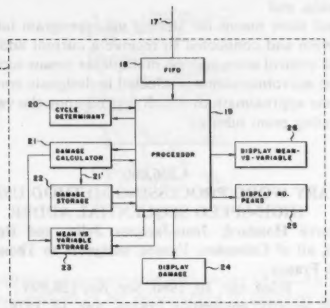
1. A structural life computer to receive electrical signals from a sensor located on a structure under cyclic loads which signals have been converted to digital signals corresponding to maximum and minimum values of stress changes in said structure, and to calculate the structural damage to said structure as indicated by said stress changes, said computer comprising:

a processor operatively connected to said sensor to receive said digital signals:

a cycle determinant operatively connected to said processor to

separate said digital signals into discrete peak values corresponding to each stress change and return said peak values to said processor;

a damage calculator operatively connected to said processor to receive said peak values and compute the analytical structure damage value by comparing said discrete peak values with pre-established peak values determined experimentally and return said structural damage value to said processor;



a damage storage operatively connected to said damage calculator and to said processor to receive and accumulate the damage value computed as aforesaid and return said accumulated damage value to said processor; and

a display operatively connected to said processor to indicate said accumulated damage value.

4,336,596

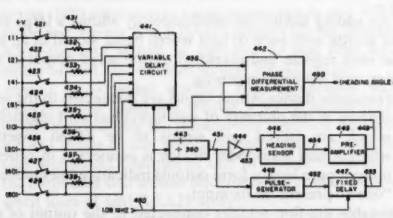
METHOD AND APPARATUS FOR ELECTRONICALLY ROTATING A HEADING SIGNAL

Willie E. Martin, Garland, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Division of Ser. No. 927,512, Jul. 24, 1978, Pat. No. 4,238,829, which is a division of Ser. No. 783,697, Apr. 1, 1977, Pat. No. 4,124,897. This application Jan. 28, 1980, Ser. No. 116,032

Int. Cl.³ G01C *21/00*

U.S. Cl. 364—559 **6 Claims**



1. The method of electronically rotating the heading signal output of a solid state Hall effect compass having a reference driving signal connected thereto to provide an electronically rotated heading signal, comprising the steps of:

(a) inputting a rotation number that determines the magnitude of rotation desired to a delay means,

(b) generating a timing signal that occurs at a fixed time delay following a positive going zero transition of said reference driving signal;

(c) time delaying said heading signal output connected to the delay means wherein said delay depends on the rotation number, and

(d) measuring the phase difference between the timing signal and the time delayed heading signal output of the delay means as an indication of an electronically rotated heading signal.

4,336,597

METHOD AND SYSTEM FOR MEASURING THE DIAMETER OF AN ELECTRON BEAM

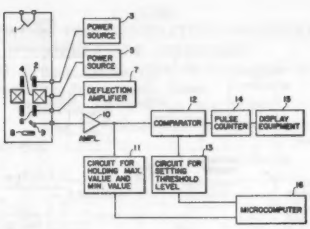
Tsuneo Okubo, Hachioji; Yasuo Kato, Zama, and Genya Matsuoka, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,295

Claims priority, application Japan, Jul. 23, 1979, 54-92677

Int. Cl.³ G01N *23/00*

U.S. Cl. 364—560 **9 Claims**



8. A system for measuring an electron beam diameter, comprising means for scanning the beam successively over a mark area formed on a boundary between areas having different material characteristics on a specimen; first detecting means for detecting electrons received from said specimen as a result of said scanning and for producing a detector signal; second detecting means for detecting the maximum and minimum values of said detector signal; means for storing first and second threshold signals representing said maximum and minimum values, respectively, as received from said second detecting means; means for measuring the time during which the level of the detector signal is between the levels of said first and second threshold signals; and means for calculating the diameter of said electron beam on the basis of said measured time.

4,336,598

ELECTRONIC CALCULATOR WITH MUSICAL NOTE GENERATION

Mikio Yanagawa, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,841

Claims priority, application Japan, Nov. 30, 1978, 53-148143

Int. Cl.³ G06F *3/16*

U.S. Cl. 364—710 **6 Claims**

1. An electronic calculator with musical note producing and sounding means, comprising:

key input means (7) including ten keys representing respective numerals and function keys representing respective functions, said ten keys and said function keys generating input information corresponding to numerals and functions when actuated, at least said keys of said ten keys having a corresponding relation to respective different musical notes;

memory means (2) coupled to said key input means (7) and including means for storing said input information;

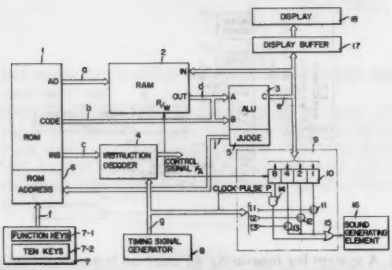
calculation means (3) coupled to said memory means (2) for receiving signals corresponding to said input information and including means for performing at least one calculation with respect to said input information to produce calculation result data for each calculation and means for generating any one of said calculation result data corresponding to the numerals representing the result of said at least one calculation;

said memory means (2) further including means for storing said calculation result data generated by said calculation means (3) in accordance with said input information;

display means (18) coupled to said calculation means (3) for displaying the numerals representing at least one of said input data and said calculation result data as display data;

timing signal generating means (8) for generating timing signals and coupled at least to said calculation means and memory means (2) for sending timing signals at least to said calculation means and to said memory means;

control means (1) coupled to said key input means (7) for delivering pre-set code signals corresponding to said numerals of said display data, so that a frequency signal corresponding to the musical note can be obtained;



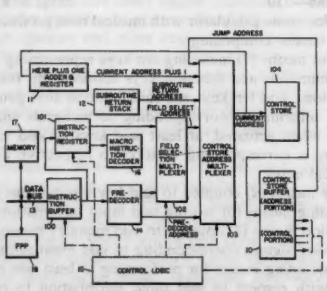
note generating means coupled to said calculation means (3), to said control means (1) and to said timing signal generating means, and including means responsive at least to a code signal from said control means and to said timing signals for producing a frequency signal of a musical note corresponding to a respective numeral of said display data, on the basis of a code signal outputted from said control means (1) and the timing signal from said timing signal generating means; and

sound generating means coupled to said note generating means for generating the respective musical note corresponding to a respective numeral of said display data upon receipt of said frequency signal.

4,336,599
CIRCUIT FOR PERFORMING A SQUARE ROOT CALCULATION

Wilson T. C. Wong, Irvine, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,500
Int. Cl.³ G06F 7/552
U.S. Cl. 364—752 **21 Claims**



1. A circuit for performing the squareroot function on a floating point number comprising,

a source for supplying a floating point number,

instruction register means connected to receive said floating point number from said source,

decoder means connected to receive said floating point number from said instruction register means,

field select multiplexer means connected to receive an address signal from said decoder means and a coded signal from said instruction register means,

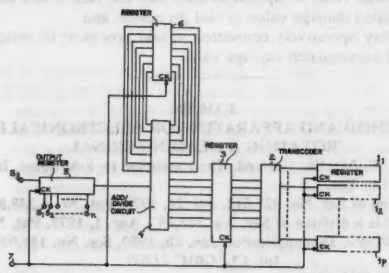
control store address multiplexer means also connected to receive a decode address signal from said decoder means and a field select address from said field select multiplexer means, and

control store means for storing microprogram information therein and connected to receive a current address from said control store address multiplexer means such that the next microinstruction is selected to designate constants for linear approximations which depend upon the value of the floating point number.

4,336,600
BINARY WORD PROCESSING METHOD USING A HIGH-SPEED SEQUENTIAL ADDER

Jean-Pierre Houdard; Jean-Jacques Julie, and Bernard G. Leoni, all of Colombes, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 10, 1980, Ser. No. 138,893
Claims priority, application France, Apr. 12, 1979, 79 09325
Int. Cl.³ G06F 7/50
U.S. Cl. 364—785 **5 Claims**



1. An adding device for simultaneously adding a large number of words with each of said words being stored in an individual shift register and extracted on the serial output of said register, said device comprising:

a transcoder device whose inputs are connected to the serial outputs of the plurality of said individual shift registers in which are stored said words to be added together, wherein said transcoder device is connected in order to present pure binary form outputs indicating the number of "one's" present on its input;

a bistable flip-flop register connected to the output of said transcoder device;

a parallel-bit add-divide circuit whose binary weight inputs are connected to the output of said flip-flop register.

a separate shift register connected to the least significant bit output of said add-divide circuit;

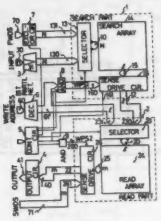
second separate register connected to the remaining outputs of said add-divide circuit which outputs a series of signals to correspondingly weighted inputs of said add-divide circuit, wherein said add-divide circuit calculates the half-sum of its inputs and provides a "one" output to said first separate register when said half-sum is not a whole number and wherein said add-divide circuit provides an output equal to the number of the whole part of said half-sum to said second separate register which represents the number of carried "one's" for use when calculating a subsequent half-sum.

4,336,601

REWRITABLE PROGRAMMABLE LOGIC ARRAY

Mamoru Tanaka, 5-16-7, Higashi-jujo, Kita-ku, Tokyo, 114, Japan

Filed Jul. 5, 1979, Ser. No. 55,009
Claims priority, application Japan, Jul. 4, 1978, 53-80531
Int. Cl.[3] H03K 19/20; G11C 15/00
U.S. Cl. 364—900 4 Claims



1. A rewritable programmable logic array (R-PLA), which loads a word pattern of bit personalities to generate specific logic function into memory cells from the word direction comprising:

a SEARCH array (14) comprising bit lines (10), sense-drive word lines (15) having end terminals thereon and multi-emitter type bistable Current Mode Logic (CML) memory cells (11) at all intersections of said bit lines with said sense-drive word lines;

a READ array (24) comprising word lines (20), sense-drive bit lines (25) having end terminals thereon and multi-emitter type bistable CML memory cells at all intersections of said word lines with said sense-drive word lines;

a first two-channel selector (13) comprising first READ inputs (130) and first WRITE inputs (131) to which input signals are respectively supplied, the outputs of said first selector being connected to said bit lines of said SEARCH array;

first sense-drive circuits (160) operable in a READ mode and a WRITE mode connected to said terminals of said sense-drive word lines of said SEARCH array, having first DRIVE inputs (161) and first WRITE pulse signal inputs (160) respectively receiving signals in said WRITE mode and having first READ outputs (12) for generating AND-function signals in response to said first READ inputs of said first selector in said READ mode;

a second two-channel selector (23) comprising second READ inputs (230) and second WRITE inputs (231) to which input signals are respectively supplied, and second READ inputs of said second selector being connected to said first READ outputs of said first sense-drive circuits, the outputs of said second selector being connected to said word lines of said READ array;

second sense-drive circuits (26) operable in a READ mode and a WRITE mode connected to said terminals of said sense-drive bit lines of said READ array, having second DRIVE inputs (261) and second WRITE pulse signal inputs (260) respectively receiving signals in said WRITE mode and having second READ outputs (22) for generating AND-function signals in response to said second READ inputs of said second selector in said READ mode;

bit partitioning networks (3) having inputs (30) for receiving input variables and having outputs (130) connected to said first READ inputs of said first selector to deliver signals to said first selector;

a WRITE address decoder (6) having inputs (60) for receiving WRITE address signals and outputs (61) connected, through means (8) for generating said first WRITE pulse signals, to said first WRITE pulse signal inputs of said first sense-drive circuit and also connected to said second WRITE inputs of said second selector,

first READ/WRITE control circuits (5, 6, 7 and 8) including said means for generating said first WRITE pulse signals and connected to said first WRITE inputs to a selected control lines (SLI) of said first selector and to said first sense-drive circuits; and

second READ/WRITE control circuits (5, 9) connected to said second selector and also to said second sense-drive circuits;

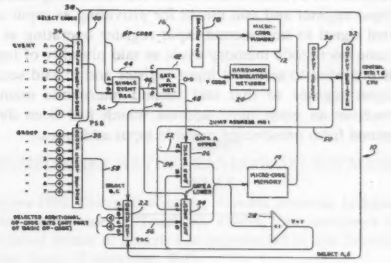
whereby AND-functions are conducted by using one multi-emitter of a transistor in each said CML memory cell and an emitter of a reference transistor in each of said sense-drive circuits in the READ mode of said R-PLA.

4,336,602

NETWORK FOR GENERATING MODIFIED MICROCODE ADDRESSES

Lawrence M. Kruger, Clifton Park, N.Y., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 24, 1979, Ser. No. 77,955
Int. Cl.[3] G06F 9/26, 13/00
U.S. Cl. 364—900 7 Claims



1. A microcode control memory for generating modified addressing, said memory being adapted to be associated with a central processor, comprising:

(a) a first microcode memory for single step microcode control instructions for receiving an input instruction code from said central processor,

(b) a second microcode memory for multistep microcode control instructions,

(c) an output select network connected to said first and said second microcode memories for determining which memory is to be an output of the system,

(d) a first input register having a plurality of inputs and one output connected to said second microcode memory for gating a first portion of an input address to said second microcode memory,

(e) a second input register having a plurality of inputs and one output connected to said second microcode memory for gating a second portion of an input address to said second microcode memory, wherein said second input register is comprised of a second input register and a group network address register for receiving as an input groups of bits representing sensed central processor events and controlled by control signals determined from an input address including means for selecting in response to said control signals a modified jump address determined from said output selection network or the output of said group network address register to be gated as an address portion to said second microcode memory,

(f) means for controlling said first input register said means being responsive to a control signal to determine which of said plurality of inputs to said first input register is to be selected as an output,

(g) means for providing input control signals to said second input register to determine which of said plurality of

inputs is to be used as an output of said second input register, wherein said means for supplying an input control signal to said second input register is comprised of a hardware translation network for receiving the input instruction code to said first microcode memory and producing a control signal for said second input register in response to decoding said input instruction code,

(h) means for supplying as an input to said first input register a first jump address portion from said output select network,

(i) means for supplying as an input to said first input register at least one additional different first address portion,

(j) means for supplying as an input to said second input register a second jump address portion from said output select network,

(k) means for supplying as an input to said second input register an incremented different second address portion, and

(l) means for supplying as an input to said second input register a plurality of bits constituting a modifier portion of said second jump address portion consisting of signals of sensed events in said central processor, whereby said system performs a modified conditional branching address function as a result of said means for controlling said first input register and said means for providing an input control signal to said second input register operating at the same microcode memory cycle as said plurality of inputs is provided to said first input register and to said second input register so that said second microcode memory receives an input jump address which had been determined from preselected possible input addresses.

4,336,603

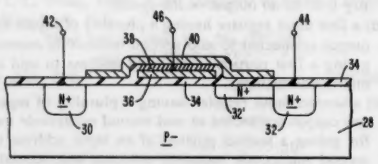
THREE TERMINAL ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY

Harish N. Kotecha, Essex Junction, and Francis W. Wiedman, III, Stowe, both of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,530

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182 **21 Claims**



1. A system comprising;

a field effect transistor having, a current carrying electrode, a floating gate and a control gate,

a first capacitor disposed between said control gate and said floating gate,

a second capacitor disposed between said current carrying electrode and said floating gate, one of said capacitors having a dual charge injector system having a graded band gap insulator structure and a capacitance value less than that of the other of said capacitors, and

means for applying pulses to said control gate and said current carrying electrode for selectively charging and discharging said floating gate.

4,336,604

MONOLITHIC STATIC MEMORY CELL

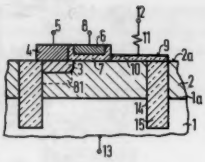
Armin Wieder, Gauting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,449

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935291

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182 **18 Claims**



1. A monolithic static memory cell, comprising

a semiconductor body of a first conductivity type having a first surface;

a semiconductor layer of a second conductivity type carried on said first surface and having a second surface;

a region of said first conductivity type in said semiconductor layer extending to said second surface;

a first drive line carried on said second surface in electrical contact with said region;

a first insulator carried on said second surface adjacent said region;

a second drive line;

a gate carried on said first insulator and connected to said second drive line;

a second, thin insulator carried on said second surface over a zone of said semiconductor layer; and

a conductive coating carried on said second insulator and adapted to receive a potential to produce a tunnel current between said second surface and said conductive coating.

4,336,605

MULTIPLEXER FOR ULTRASONIC RANGING DEVICE

John Vancha, Bolingbrook, Ill., assignor to Hurst Performance, Inc., Warminster, Pa.

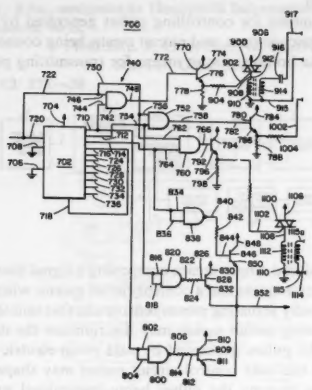
Continuation-in-part of Ser. No. 171,529, Jul. 23, 1980. This application Sep. 26, 1980, Ser. No. 191,461

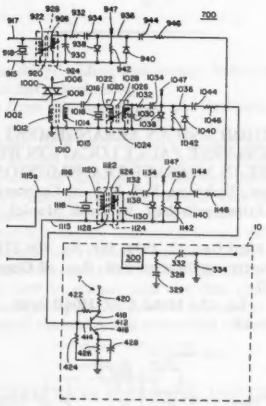
Int. Cl.³ G01S *15/88*

U.S. Cl. 367—105 **2 Claims**

1. A multiplexer for an ultrasonic ranging device for a vehicle comprising resettable counter means for receipt of a timing pulse train and providing a counter output signal indicative of a stored count of the number of pulses in said pulse train, said counter means resetting to zero upon a predetermined periodic output condition, switch means receiving said counter output signal and providing a switch output signal in response thereto, a plurality of ultrasonic transducers connected to said switch means, said transducers being successively sequentially energized in response to said output signal from said switch means, said switch means including a transmit gate which controls energization of a transmission control transistor connected between said transmit gate and one of said transducers and a receiver gate adapted to isolate selectively one of the transducers from a portion of a receiver by controlling a receiver con-

trol transistor connected to said receiver gate and to a portion of said receiver to shunt selectively a transducer return signal





to ground when said receiver control transistor is in conduction.

4,336,606

WIND SPEED MEASUREMENT

Maurice C. Heard, Hullbridge, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Sep. 23, 1980, Ser. No. 189,914

Claims priority, application United Kingdom, Sep. 25, 1979, 7933161

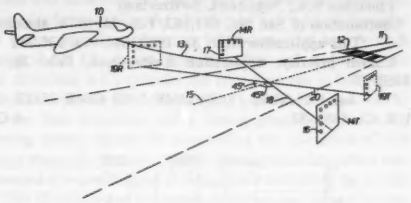
Int. Cl.³ G01S *11/00*; G01W *1/00*

U.S. Cl. 367—117 **10 Claims**

1. Apparatus for the detection and measurement of wind gradient at a location, which apparatus comprises:

means for transmitting and means for receiving a regular sound wave train, which two means are positioned facing each other, and like orientated in a selected direction, at each of two or more heights at the location;

means for noting the phase of each received sound wave train, for comparing that phase with the phase of the wave train as transmitted, and for thereby deducing the wind-caused phase change; and



means for calculating from the deduced phase change at each height the wind speed in the selected direction at that height.

4,336,607

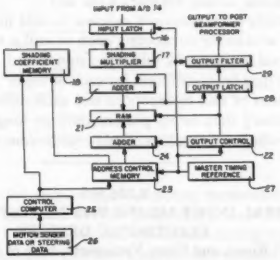
BEAMFORMER HAVING RANDOM ACCESS MEMORY DELAY

Eugene Hill, Cornwall, Canada; Arnolds Jansons, Indianapolis, Ind., and James J. Truchard, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1980, Ser. No. 214,830

Int. Cl.³ G01S *3/80*

U.S. Cl. 367—123 **3 Claims**



1. A beamformer comprising,

a sonar receiver having a plurality of spatially distributed hydrophones for transforming sound pressure signals into analog electrical signals,

an analog multiplexer for sequentially obtaining said analog electrical signals from said sonar receiver,

an analog to digital converter connected to said analog multiplexer for digitizing said analog electrical signals,

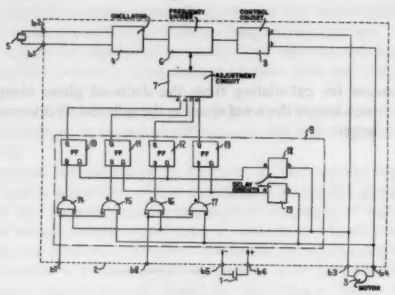
a random access memory for storing digital words at an address to be read out after a time delay, and

an adder having one input connected with an output of said analog to digital converter and another input connected with said random access memory and having an output connected with said random access memory.

4,336,608
ELECTRONIC TIMEPIECE

Jean-Claude Berney, Epalinges, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Continuation of Ser. No. 881,162, Feb. 24, 1978, abandoned.
This application Mar. 31, 1980, Ser. No. 135,741
Claims priority, application Switzerland, Feb. 28, 1977, 2460/77
Int. Cl.[3] G04C *19/00*; G04F *5/00*; G04B *17/12*
U.S. Cl. 368—82 4 Claims



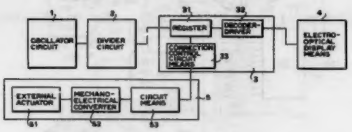
1. An electronic timepiece, comprising:
a power source;
means for displaying time data in response to display control signals;
an integrated circuit provided with m terminals comprising power terminals for connecting said power source and display terminals for connecting said displaying means, and further provided with n terminals for applying input signals, said integrated circuit including means for producing time base pulses, means for producing said display control signals in response to said time base pulses, an introduction circuit for producing auxiliary data in response to said input signals and said display control signals, and means for performing an auxiliary function in response to said auxiliary data; and
a plurality of connections external to said integrated circuit for selectively connecting each of said n terminals to one of said m terminals, said input signals and, thus, said auxiliary data being different for each of the m^n possible combinations of said connections and each different set of said auxiliary data being present only so long as said corresponding combination of said connections remain in place.

4,336,609
DIGITAL INPUT MEANS FOR MINIATURE TYPE ELECTRONIC DEVICES

Kazunari Kume, and Sizuo Yamaguchi, both of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 87,500, Oct. 23, 1979, abandoned. This application Apr. 8, 1981, Ser. No. 252,226
Claims priority, application Japan, Dec. 6, 1978, 53-151382
Int. Cl.[3] G04C *9/00*
U.S. Cl. 368—188 2 Claims

1. A digital input means for miniature type electronic devices comprising:
(a) an oscillator circuit for generating a reference signal;
(b) a frequency divider circuit for generating a unit signal from said reference signal delivered from said oscillator circuit;
(c) a data holding circuit means for generating a driving signal from said unit signal delivered from said frequency divider circuit;
(d) an electro-optical display means for performing a digital display by means of the driving signal delivered from said data holding circuit means;
(e) a piezo-electric element driven by an externally actuating means; and
(f) a circuit means for controlling pulses generated by said piezo-electric element, said circuit means being connected to said data holding circuit means for transmitting pulses

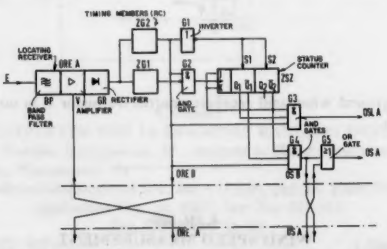


thereto and said circuit means comprising a signal discriminating circuit means and a control circuit means, whereby said externally actuating means is driven so that said signal discriminating circuit means may discriminate the directions of the pulses generated by said piezo-electric element, and that said control circuit means may shape the pulses, and thereby the pulses being transmitted to the input of said data holding circuit means.

4,336,610
METHOD AND AN ARRANGEMENT FOR ADDRESS-FREE FAULT LOCATION BY LOOP CLOSURE IN MESSAGE TRANSMISSION LINKS

Erhard Steiner, Eichenau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,271
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904057
Int. Cl.[3] H04J *3/14*; H04B *3/46*
U.S. Cl. 370—15 12 Claims



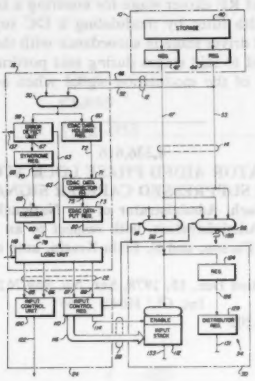
11. In an intermediate station of a message transmission link for transmission in both locating transmission directions, a respective receiver, including an amplifier, for each transmission direction for receiving a loop closure signal and responsive thereto to switch on a predetermined logic state, a first memory connected to the output of said amplifier for storing the loop closure signal for first and second predetermined holding times and during a predetermined interruption interval of the loop closure signal as a switching pulse interval, and a second memory connected to the output of said first memory including a counter for storing the count thereof in each case corresponding to the appearance of switching pulses which are equal to or greater than the switching pulse interval.

4,336,611

ERROR CORRECTION APPARATUS AND METHOD

Donn E. Bernhardt, and Lowell D. McCulley, Jr., both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 3, 1979, Ser. No. 99,351
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—38 10 Claims



1. Apparatus for providing data groups from a memory to a destination circuitry comprising:

a. a first path from said memory to said destination circuitry; and

b. a second path from said memory to said destination circuitry, said second path including error detection and correction circuitry for detecting at least one data group from said memory having an error therein and substituting a corrected data group therefor; and

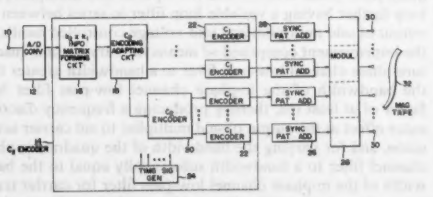
c. a control unit operatively connected to said error detection and correction circuitry and to said destination circuitry for indicating said error, said destination circuitry responding to said control unit to replace said one data group with said corrected data group and to receive subsequent data groups from said error detection and correction circuitry.

4,336,612

ERROR CORRECTION ENCODING AND DECODING SYSTEM

Toru Inoue; Yasuo Sugiyama, and Ken Onishi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 3,941, Jan. 16, 1979, abandoned. This application May 16, 1980, Ser. No. 150,654
Claims priority, application Japan, Jan. 17, 1978, 53-4012
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—39 14 Claims



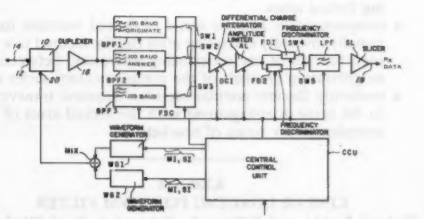
1. An encoding and decoding system for digital information having a rectangular array of bits including k_1 bits in a first direction and k_2 bits in a second direction orthogonal to the first direction which system comprises encoding means including an encoding adapting circuit for codes C_2 for dividing the k_1 bits in the first direction into b bits apiece, and forming a plurality of $k_2 \times b$ bit rectangular arrays each including the b bits in the first direction and the k_2 bits in the second direction, a C_2 encoder for encoding the plurality of $k_2 \times b$ bit rectangular arrays into a plurality of $n_2 \times b$ bit rectangular arrays each including the b bits in the first direction and n_2 bits in the second direction, a C_1 encoder for encoding the k_1 bits in the first direction into n_1 bits by adding $n_1 - k_1$ check bits to the k_1 bits in the first direction, and a timing generator circuit for generating timing signals for controlling the operation of said encoding means to thereby encode the digital information into a codeword of a generalized product code including the n_1 bits in the first direction and the n_2 bits in the second direction; and decoding means operatively connected to said encoding means by a transmission means for decoding the digital information encoded by the encoding means; wherein said C_1 and C_2 encoders are operative to encode in response to said timing signals of said timing generator and wherein either said C_1 encoder or said C_2 encoder provides said generalized product code.

4,336,613

CHARGE COUPLED DEVICE FILTERS AND MODEMS INCORPORATING SUCH FILTERS

Charles R. Hewes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1977, Ser. No. 811,657
Int. Cl.[3] H04L *27/10*
U.S. Cl. 375—9 22 Claims



1. Apparatus for receiving and filtering modulated analog signals having different carrier frequencies including input terminal means for receiving said modulated analog signals on at least two frequency channels, a signal transmission path, an individual charge coupled device bandpass filter means for each of said two channels, switching means operable to select and connect one of said bandpass filter means between said input terminal means and said signal transmission path; each said bandpass filter means including phase electrode sets, each said set including a split electrode for signal amplitude weighting, the split electrodes of each filter means disposed and configured to define a bandpass characteristic for said filter means, means for applying phased pulses to said bandpass filter phase electrodes such that the frequencies of said phased pulses are different for each said filter and each filter has a predetermined center frequency, and means for applying switching pulses to operate said switch means to select a particular bandpass filter having a center frequency matched with the carrier frequency of the analog signal received at said input terminal means.

4,336,614
TUBE-IN-SHELL HEAT EXCHANGERS

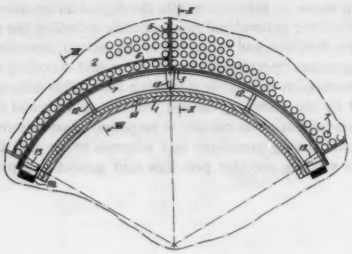
Colin H. Mitchell, Knutsford, and Michael J. Young, Warrington, both of England, assignors to Nuclear Power Company Limited, London, England

Filed Aug. 28, 1979, Ser. No. 70,433

Claims priority, application United Kingdom, Sep. 19, 1978, 37299/78

Int. Cl.³ G21C *15/00*

U.S. Cl. 376—405 **4 Claims**



1. A tube-in-shell heat exchanger comprising

a tubular shell having inlet ports for conducting a first heat exchange fluid through the shell,

a plurality of spaced heat exchange tubes extending longitudinally within the shell, the tubes penetrating at least one end closure of the shell for conducting a second heat exchange fluid,

a series of longitudinally spaced transverse grids for bracing the heat exchange tubes apart,

a spine disposed on the longitudinal axis of the shell for supporting said transverse grids, and

resiliently yieldable means for mounting said grids on the spine, each resiliently yieldable means comprising

an annular series of brackets rigidly secured to the spine, the brackets each having a pair of radially outwardly extending forked arms,

a complementary annular series of forked brackets having radially inwardly extending arms rigidly secured to a grid, each bracket of one series being interposed between two neighbouring brackets of the complementary series and

a resiliently flexible annular member disposed transversely to the spine in engagement with the forked arms of both complementary series of brackets.

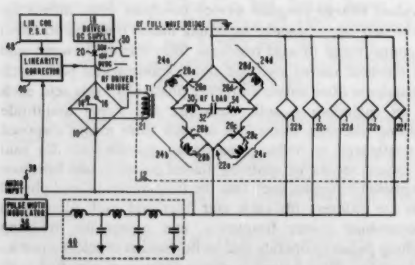
4,336,615
LINEAR LOADING FOR PWM FILTER

Richard F. Abt, and William L. Behrend, both of Pittsburgh, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,023

Int. Cl.³ H03G *11/04;* **H03C** *1/06*

U.S. Cl. 455—108 **8 Claims**



1. An apparatus comprising an RF driver stage, an RF power amplifier stage coupled to said RF driver stage, a pulse width modulator having input means for receiving a modulating signal, a pulse width filter having an input coupled to said pulse width modulator and an output coupled to said RF driver stage and to said RF power amplifier stage, said RF power amplifier stage presenting a nonlinear load to said pulse width filter during a portion of the conduction cycle of said modulation signal, and linearity correction means having an input coupled to said pulse width filter output and an output coupled to said RF driver stage for ensuring a linear load on said pulse width filter by modulating a DC supply voltage applied to said driver stage in accordance with the modulation voltage applied to said stages during said portion of the conduction cycle of the modulation signal when a nonlinearity occurs.

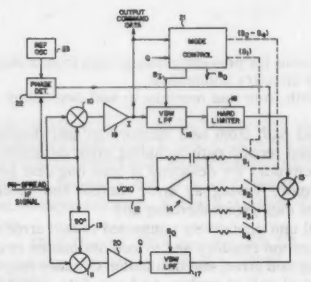
4,336,616
DISCRIMINATOR AIDED PHASE LOCK ACQUISITION FOR SUPPRESSED CARRIER SIGNALS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Lansing M. Carson, and F. Elvin Krasin, both of Scottsdale, Ariz.

Filed Dec. 15, 1978, Ser. No. 969,762

Int. Cl.³ H04B *1/68*

U.S. Cl. 455—202 **5 Claims**



3. In a Costas loop for acquisition and tracking a suppressed carrier signal, said loop having an in-phase and a quadrature-phase channel, said in-phase channel having a phase detector for comparing the phase of said carrier signal and a signal from a voltage controlled oscillator and having a low-pass filter and hard limiter in series between the output of said in-phase phase detector and the input of a multiplier for the output signals of the in-phase and quadrature-phase channels, said quadrature-phase channel having means for shifting the output of said voltage controlled oscillator by 90° and a phase detector for comparing the phase of said carrier signal and a signal from said voltage controlled oscillator shifted 90°, and having a variable low-pass filter in series between the output of said quadrature phase detector and the input of said multiplier, said loop further having a variable loop filter in series between the output of said multiplier and said voltage controlled oscillator, the improvement comprised of means for varying said quadrature-phase channel low-pass filter to a bandwidth greater than the bandwidth of the in-phase channel low-pass filter by a factor of at least ten, thereby producing a frequency discriminator effect at the output of said multiplier to aid carrier acquisition, and for varying the bandwidth of the quadrature-phase channel filter to a bandwidth substantially equal to the bandwidth of the in-phase channel low-pass filter for carrier tracking, and means for controlling said variable loop filter to have a wide bandwidth for carrier acquisition while said means for varying said quadrature channel filter is set for carrier acquisition and to have a narrower bandwidth for carrier tracking while said means for varying said quadrature channel filter is set for carrier tracking.

DESIGN PATENTS

GRANTED JUN. 22, 1982

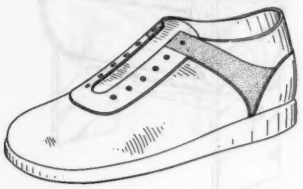
ERRATA

For CLASS	See PATENT NO.
D32–058	265,045

DESIGNS

JUNE 22, 1982

265,015
SPORT SHOE
Kenneth D. Higgins, Scarborough, Canada, assignor to Warrington Inc., Mississauga, Canada
Filed Dec. 21, 1979, Ser. No. 106,112
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

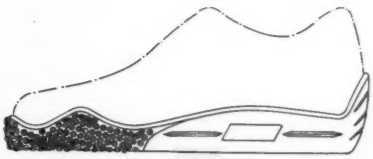


265,016
ATHLETIC SHOE
Billy J. Haddox, Rte. 2, Box 535 B, Chesterton, Ind. 46304
Filed Oct. 29, 1979, Ser. No. 89,596
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310

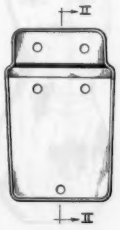
265,017
SHOE SOLE
Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France
Filed May 6, 1980, Ser. No. 147,316
Claims priority, application France, Nov. 6, 1979, 277
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

265,018
SHOE SOLE
Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France
Filed May 6, 1980, Ser. No. 147,317
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

265,019
SHOE SOLE
Christian Vermonet, Cholet, France, assignor to Societe Technisynthese (S.A.R.L.), Saint Pierre Montlimart, France
Filed May 6, 1980, Ser. No. 147,318
Claims priority, application France, Nov. 6, 1979, 277
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



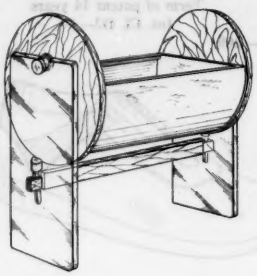
265,020
LACE-ONTO-SHOE PURSE OR SIMILAR ARTICLE
Hannah L. Silton, 2419 Meadow Dr. South, Wilmette, Ill. 60091
Filed Mar. 19, 1980, Ser. No. 131,841
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—42



265,021
CHECKBOOK COVER
Eric R. Hayman, Maple Glen, and Scott R. Penniman, Lansdale, both of Pa., assignors to Safeguard Business Systems, Inc., Fort Washington, Pa.
Filed Jun. 26, 1980, Ser. No. 163,170
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56

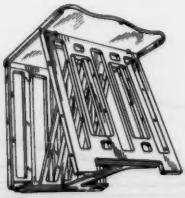
265,022
DOLL-BAG
William D. Parker, 7421 Daniel Webster Dr., Orlando, Fla. 32807
Continuation-in-part of Ser. No. 754,592, May 27, 1976, abandoned. This application Apr. 9, 1979, Ser. No. 28,078
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—66

265,023
CRADLE
Armand A. Giglio, Turk Hill Rd., Brewster, N.Y. 10509
Filed Dec. 3, 1979, Ser. No. 99,972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—15

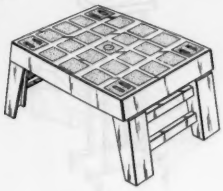


265,024
GREETING CARD AND GIFT WRAP DISPLAY UNIT OR THE LIKE
John Johnson, and Ed Gandolf, both of Strongsville, Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed Sep. 25, 1978, Ser. No. 945,560
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24

265,025
PORTABLE SEAT OR SIMILAR ARTICLE
James Nichols, Old Saybrook, Conn., and Franklyn M. Markus, 5725 Cote St. Luc, Hampstead, Quebec, Canada (H3X 2E6), assignors to Franklyn M. Markus, Hampstead, Canada
Filed May 13, 1980, Ser. No. 149,407
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

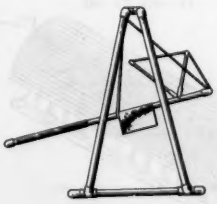


265,026
FOLDABLE STOOL
Jan M. Macho, La Canada, and Richard O. Oxford, Los Angeles, both of Calif., assignors to Dial Industries, Los Angeles, Calif.
Filed May 15, 1980, Ser. No. 150,062
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32

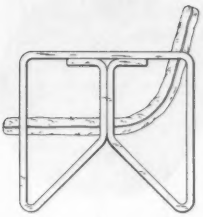


265,027
SEAT
Marc A. Meyers, Socorro, N. Mex., assignor to Samuel V. Abramo and John G. Abramo, both of Wilmington, Del., a part interest
Filed Apr. 16, 1980, Ser. No. 140,775
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

265,028
SWINGING CHAISE
Vincent P. Sorrentino, Parkland, Fla., assignor to Bright Industries Inc., Fort Lauderdale, Fla.
Filed Sep. 10, 1979, Ser. No. 73,787
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—52



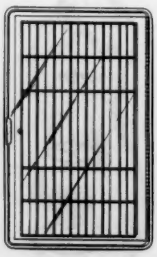
265,029
CHAIR
Steven D. Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Division of Ser. No. 911,470, Jun. 1, 1978, which is a division of Ser. No. 677,747, Apr. 16, 1976. This application Jun. 1, 1979, Ser. No. 44,412
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



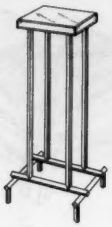
265,030
DISPLAY DEVICE FOR BOOTS
Claudio Gallon, Padua, Italy, assignor to Rigon S.p.A., Italy
Filed Sep. 10, 1979, Ser. No. 73,637
Claims priority, application Italy, Mar. 8, 1979, 21033/79[U]
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85

265,031
DRESSER OR THE LIKE
Harold V. Aulbert, Guilford, and Charles M. Horton, Iredell, both of N.C., assignors to Burlington Furniture Div. of Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 11, 1980, Ser. No. 139,354
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

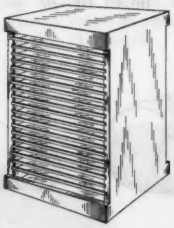
265,032
MERCHANDISE DISPLAY RACK
Philip R. Brown, Huntington, N.Y.; Charles M. Baffo, Wilton, Conn., and Edward J. Meyers, Wayne, Pa., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Aug. 16, 1979, Ser. No. 66,955
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—172



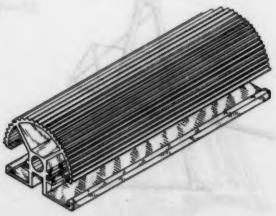
265,033
TABLE
Kaloust P. Sogoian, 21820 W. Eight Mile Rd., Southfield, Mich. 48075
Filed Jul. 26, 1979, Ser. No. 61,136
Term of patent 14 years
Int. Cl. D6—*01, 03*
U.S. Cl. D6—177



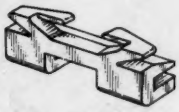
265,034
CABINET FOR STORING PIZZA SKINS OR THE LIKE
Donald H. Lickey, Rte. 4, Box 562A, Scappoose, Oreg. 97056
Filed Oct. 1, 1979, Ser. No. 80,922
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



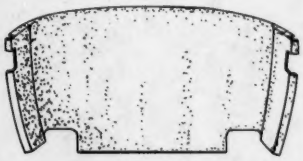
265,035
CORNER CONNECTOR FOR FURNITURE PANELS
Kenneth B. Fether; Maurice Grosse, and Michael Carson, all of London, England, assignors to Planned Space Products Limited, England
Filed Aug. 16, 1979, Ser. No. 67,037
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



265,036
BEARING MEMBER FOR SUPPORTING A DRAWER ON A RUNNER
Leon G. Litchfield, Youlgrave, and Terence Hardy, Ripley, both of England, assignors to L.B. (Plastics) Limited, Derby, England
Filed Oct. 9, 1979, Ser. No. 83,106
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



265,037
CHAIR BACK FOR AN AUTOMOBILE
George D. Bowman, Detroit, Mich., assignor to The Model A and Model T Motor Car Reproduction Corporation, Battle Creek, Mich.
Filed Sep. 24, 1979, Ser. No. 78,656
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D6—197



265,038
PLACE MAT
Anne S. Tomasi, San Jose, Calif., assignor to Apron Linen Tree of California, Inc., San Jose, Calif.
Filed Jun. 9, 1980, Ser. No. 157,404
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—271

265,039
PLATE OR SIMILAR ARTICLE
Jean-Jacques Durand, LaGarenne, 62510 Arques, France
Filed Sep. 8, 1980, Ser. No. 185,030
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—5

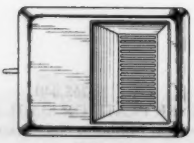
265,040
DINNER PLATE OR SIMILAR ARTICLE
Alan H. Friedman, Millburn, N.J., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Jul. 14, 1980, Ser. No. 168,693
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—35

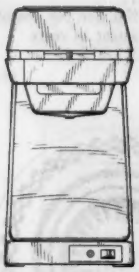
265,041

COFFEEMAKER

Ernest Lee, Park Ridge, and Robert O. Ernest, Oak Park, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 19, 1980, Ser. No. 160,881
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—41



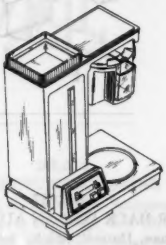


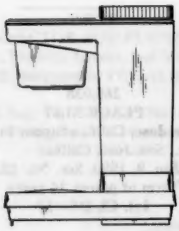
265,042

COFFEE MAKER

Thomas E. Hanson, Phoenixville, Pa., and William L. Wolfe, deceased, late of Pompey, N.Y. (by Ellen M. Wolfe, administratrix), assignors to SCM Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,906
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—41





265,043

COMBINED INSULATED BEVERAGE DISPENSER AND TUMBLER HOLDER

Yung-Kuan Wei, No. 196, Yen Tien Li An Nan District, Tainan, Taiwan

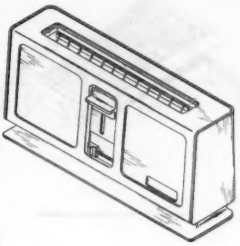
Filed Apr. 3, 1980, Ser. No. 136,917
Term of patent 14 years
Int. Cl. D07—*01, 99*
U.S. Cl. D7—51

265,044

TOASTER

Thomas E. Hanson, Phoenixville, and Craig B. Kelley, Wayne, both of Pa., assignors to SCM Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 167,965
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—93



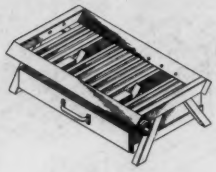
265,045

DEVICE FOR DRYING CLOTHES

Masayo Taniyama, 1347, Fuchu, Wakayama-shi, Wakayama-Ken, Japan

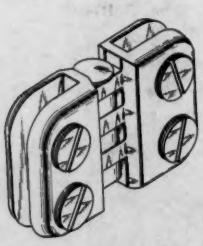
Filed Jun. 28, 1979, Ser. No. 53,184
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—58

265,046
FIREPLACE GRATE AND BLOWER TUBE SURROUND ASSEMBLY
Byron D. Lane, 212 16 Ave. SW., Minot, N. Dak. 58701
Filed Jun. 30, 1980, Ser. No. 164,011
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D7—207

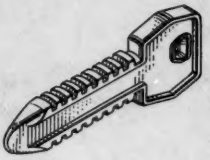


265,047
COMBINED PULL TAB AND CAN OPENER
Paul F. Reel, 836 Adams St., NW., Warren, Ohio 44482
Filed Dec. 6, 1979, Ser. No. 100,867
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—18

265,048
HINGED CLAMP
James F. Guardia, Yorba Linda, Calif., assignor to Cal-Tuf Glass Corporation, Alhambra, Calif.
Filed Apr. 7, 1980, Ser. No. 137,859
Term of patent 14 years
Int. Cl. D8—*06, 08*
U.S. Cl. D8—328



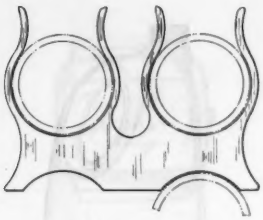
265,049
ELECTRONIC INFORMATION KEY
William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Minneapolis, Minn.
Filed May 27, 1980, Ser. No. 153,720
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—347



265,050
ELECTRICAL OUTLET BOX RETAINER
Marvin W. Riedl, Rte. 2, Box 122, Zimmerman, Minn. 55398
Filed Apr. 28, 1980, Ser. No. 144,408
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354

265,051
WET POST ANCHOR BASE
Walter G. Hentzschel, Bethesda, and George W. Kingston, Chevy Chase, both of Md., assignors to TECO Products & Testing Corporation, Washington, D.C.
Filed Jun. 23, 1980, Ser. No. 161,872
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354

265,052
CONDUIT SPACER
Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187
Filed Jun. 16, 1980, Ser. No. 159,856
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356

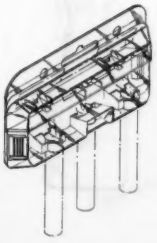


265,053
PICTURE FRAME HOOK
Arthur O. Aerne, 25083 W. Forest Dr., Lake Villa, Ill. 60046
Filed Jan. 21, 1980, Ser. No. 113,483
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—370

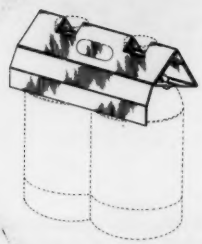
265,054
FASTENER
Syozo Kumada, Nagoya, Japan, assignor to Tsutai Company Limited, Aichi, Japan
Filed Jan. 30, 1979, Ser. No. 7,703
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—389

265,055
BUNDLING TIE
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Division of Ser. No. 929,592, Jul. 31, 1978. This application May 12, 1980, Ser. No. 149,225
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D8—394

265,056
PACKING CONTAINER FOR SAFETY RAZORS
Frederick B. Hadtke, New Providence, N.J., assignor to American Safety Razor Company, Verona, Va.
Filed Jun. 16, 1980, Ser. No. 159,727
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—342

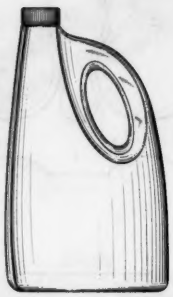


265,057
ARTICLE CARRIER
Prentice J. Wood, Hapeville, and Richard K. Watkins, Lithonia, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Jun. 24, 1980, Ser. No. 162,669
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—346



265,058
BOTTLE OR THE LIKE
Edwin E. Ewry, 453 Wellesby St., Mill Valley, Calif. 94941
Filed May 5, 1980, Ser. No. 146,774
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349

265,059
BOTTLE
Thomas Q. White, Chicago, and Archie G. Drummond, Jr., Palatine, both of Ill., assignors to The Drackett Company, Cincinnatti, Ohio
Filed Jul. 8, 1980, Ser. No. 166,930
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—376



265,060
DISPENSING CLOSURE
Elliott E. Blank, Fairfax, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Sep. 13, 1979, Ser. No. 75,503
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—446

265,061
CAN LID
Bruce E. Tricinella, 6242 Warner, Huntington Beach, Calif. 92647
Filed Jun. 17, 1980, Ser. No. 160,559
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—454

265,062
WATCHCASE
Yoshio Hirabayashi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed May 9, 1980, Ser. No. 148,333
Claims priority, application Japan, Nov. 14, 1979, 54-47633
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

265,063
WATCH
Kaoru Iida, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Jul. 10, 1980, Ser. No. 167,264
Claims priority, application Japan, Jan. 10, 1980, 55-284
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

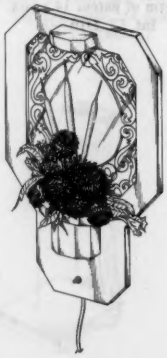
265,064
DARTS SCORING MACHINE
William J. Martin, Jr., London, England, assignor to Nodor Scores Limited, London, England
Filed Jan. 23, 1980, Ser. No. 114,682
Claims priority, application United Kingdom, Jul. 27, 1979, 990952
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46.1

265,065
CARDIAC PACEMAKER TESTER
Tex Yukl, Banks, Oreg., assignor to Powers Medical Systems, Inc., Beaverton, Oreg.
Filed May 12, 1980, Ser. No. 148,996
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

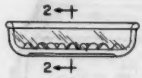
265,066
DIGITAL SCALE
Joe Solomon, 3586 Barham Blvd., Los Angeles, Calif. 90068
Filed Jul. 30, 1979, Ser. No. 61,686
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—93

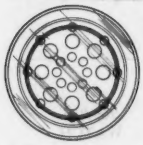
265,067
BEZEL RING OR SIMILAR ARTICLE
Mark Grosskopf, Palm Beach, Fla., assignor to Jewelmasters, Inc., Palm Beach, Fla.
Filed Jul. 10, 1980, Ser. No. 168,208
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—30

265,068
WALL PLAQUE
Marvin Jackson, Jr., 4527 Oak Shadows, Houston, Tex. 77091
Filed Dec. 1, 1978, Ser. No. 957,798
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—139



265,069
TRAY FOR FLOWER POTS OR THE LIKE
Kenneth R. LeVan, Kintnersville, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 16, 1979, Ser. No. 58,098
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—164

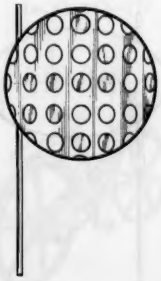




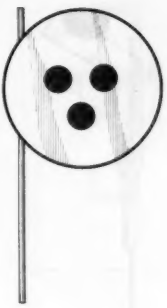
265,070
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 115,894
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,071
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,048
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,072
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,165
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

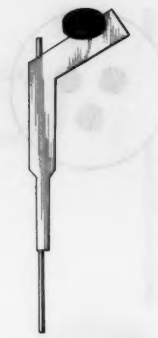


265,073
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,166
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166



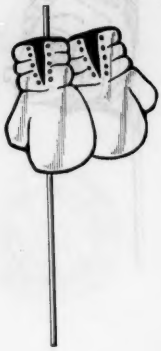
265,074
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,167
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,075
PENNANT
Larry B. Ornatek, 100 - 14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,169
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

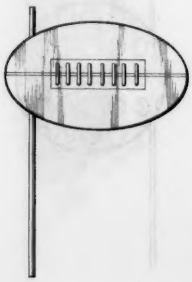


265,076
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,261
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,077
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,262
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166



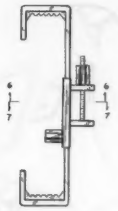
265,078
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,263
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166



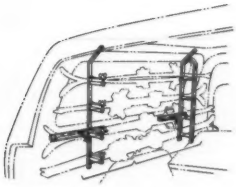
265,079
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,267
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,080
BICYCLE
Jan G. Olsson, Sjögangen 6, 421 71 V. Frölunda, and Lars E. Samuelsson, Hedangen 5, 433 00 Partille, both of Sweden
Filed Sep. 12, 1979, Ser. No. 74,814
Claims priority, application Sweden, Mar. 12, 1979, 79-0624; Mar. 12, 1979, 79-0625
Term of patent 14 years
Int. Cl. D12—*111*
U.S. Cl. D12—111

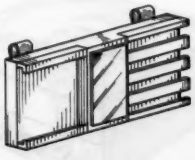
265,081
TRACTION TIRE CLAMP FOR A MOTOR VEHICLE WHEEL
Edmund A. Zielinski, R.D. 4, Box 418, Newton, N.J. 07860
Filed Mar. 21, 1979, Ser. No. 22,604
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154



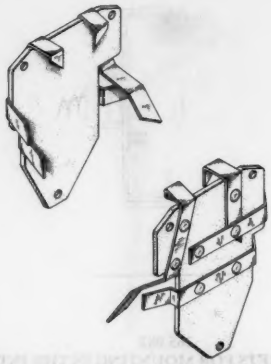
265,082
SET OF BRACKETS FOR MOUNTING IN THE INTERIOR OF A VEHICLE FOR SUPPORTING SKIS
Anton P. Welder, Box 63, Napoleon, N. Dak. 58561
Filed Aug. 6, 1979, Ser. No. 64,472
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



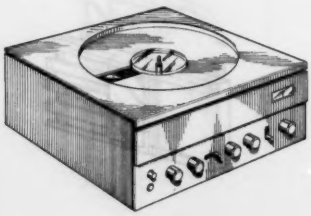
265,083
INFORMATION DISPLAY DEVICE FOR MOTOR VEHICLE INTERIOR
Alvin L. Divoky, 1207 Childs Rd., Omaha, Nebr. 68147
Filed Nov. 5, 1979, Ser. No. 91,260
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—191



265,084
CIRCUIT BOARD
Gerald Goldin, 138 S. Parkview Ave., Columbus, Ohio 43209
Filed Oct. 9, 1979, Ser. No. 82,923
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—10



265,085
PHONOGRAPH
Earl E. Masterson, Minneapolis, Minn., assignor to Masterson Engineering Inc., St. Louis Park, Minn.
Filed Nov. 15, 1978, Ser. No. 960,849
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—14



265,086
LOUDSPEAKER
Manabu Kawachi, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 17, 1979, Ser. No. 67,705
Claims priority, application Japan, Apr. 5, 1979, 54-13717
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—30

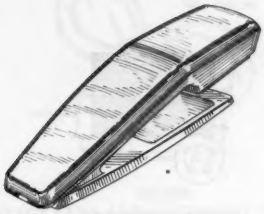
265,087
TELEPHONE UNIT
Ryoji Yamaguchi, Kokubunji, and Noboru Mihara, Mitaka, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Sep. 27, 1979, Ser. No. 79,428
Claims priority, application Japan, Apr. 20, 1979, 54-16254; Apr. 20, 1979, 54-16255
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

265,088

COMBINED TELEPHONE SET AND BASE THEREFOR

George M. Janda, Wheaton, and Richard E. Cobb, Western Springs, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 28, 1979, Ser. No. 107,955
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



265,089

TELEPHONE SET BASE

James W. M. Bee, Palo Alto, Calif., assignor to Northern Telecom Limited, Montreal, Canada

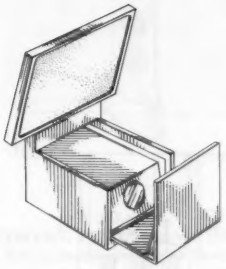
Filed Oct. 31, 1979, Ser. No. 89,939
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

265,090

PROJECTION TELEVISION CABINET

Muzaffer Coban, 3106 W. Thomas Rd., Suite 1101, Phoenix, Ariz. 85017

Filed Mar. 26, 1979, Ser. No. 23,839
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79



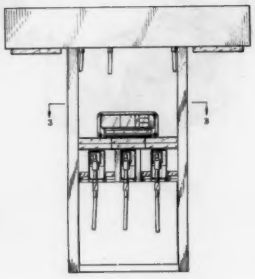
265,091

MEDIA CONVERTER UNIT FOR A TAPE CASSETTE FOR DATA PROCESSING DISPLAY SYSTEM

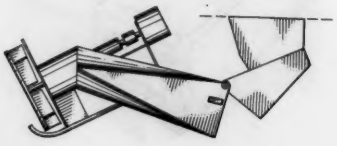
Claude H. Hutcheson, Garland, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 10, 1979, Ser. No. 83,210
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107

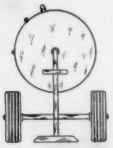
265,092
GASOLINE DISPENSER
George D. Robinson, Jr.; Lacivita, Angelo M. Lacevita, both of Greensboro; Hal C. Hartsell, Jr., Kernersville, all of N.C., and David D. Tompkins, Worthington, Ohio, assignors to Gilbert & Barker Manufacturing Co., Inc., Greensboro, N.C.
Filed Jun. 6, 1980, Ser. No. 157,062
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9.2

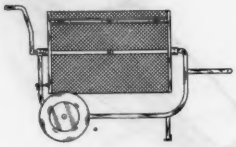


265,093
RETRACTABLE AIRCRAFT MOUNTED DRY MATERIAL SPREADER
Theodore Croghan, P.O. Box 257, Grimes, Calif. 95950
Filed May 23, 1980, Ser. No. 152,778
Term of patent 14 years
Int. Cl. D15—*03*; D12—*07*
U.S. Cl. D15—13

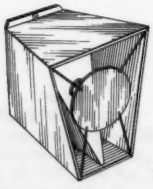


265,094
SEPARATOR
William L. Williams, 1900 Capri Rd., Valrico, Fla. 33594
Filed Sep. 17, 1979, Ser. No. 76,271
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—147

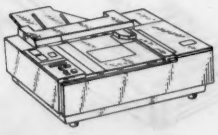




265,095
PROJECTION KALEIDOSCOPE
Lawrence M. Butler, 37 Turning Mill Rd., Lexington, Mass. 02173
Filed Mar. 23, 1979, Ser. No. 23,326
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—11

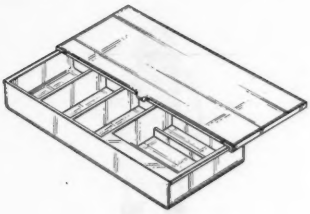


265,096
FACSIMILE ELECTROSTATIC COPIER
Nobuo Masaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 29, 1980, Ser. No. 145,006
Claims priority, application Japan, Nov. 1, 1979, 54-46326
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



265,097
PAIR OF SPECTACLE FRAME EYE PIECES
Shari Lewis, 603 Alta Dr., Beverly Hills, Calif. 90210
Continuation-in-part of Ser. No. 911,362, Jun. 1, 1978, Pat. No. Des. 256,025. This application Jan. 17, 1980, Ser. No. 112,855
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—122

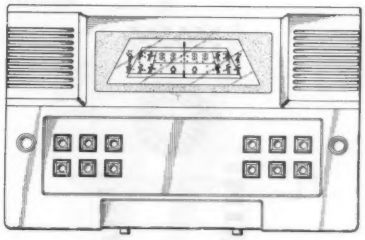
265,098
CONTACT LENS AND ACCESSORY CONTAINER
William F. Crowe, 1405 Ocean Dr., Oxnard, Calif. 93030
Filed Mar. 10, 1980, Ser. No. 128,446
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—129



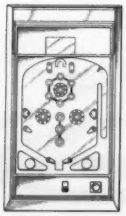
265,099
PRINT WHEEL CARTRIDGE OR THE LIKE
Paul Feinstein, Jr.; Adolph B. Habich, both of Austin; Ronald E. Hunt, Georgetown, and Herbert E. Meister, Jr., Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 16, 1980, Ser. No. 159,556
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12

265,100
INDICATOR FOR CLASSROOM CONTROL AND EDUCATION
Ruth R. Oettinger, 525 N. Fifth St., Albemarle, N.C. 28001
Filed Oct. 4, 1979, Ser. No. 81,865
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64

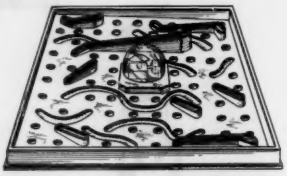
265,101
ELECTRONIC TENNIS GAME HOUSING
Akio Tsuyuki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed May 27, 1980, Ser. No. 153,326
Claims priority, application Japan, Dec. 15, 1979, 54-52796
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



265,102
ELECTRONIC PINBALL GAME HOUSING
Katsumi Sato, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 6, 1980, Ser. No. 157,034
Claims priority, application Japan, Dec. 20, 1979, 54-53514
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

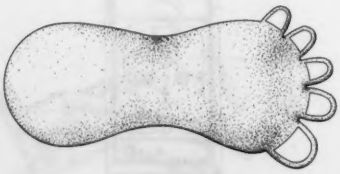


265,103
GAME BOARD
Frederick H. Kroll, 72 Wood Hollow La., New Rochelle, N.Y. 10804
Filed Jun. 30, 1980, Ser. No. 164,355
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17

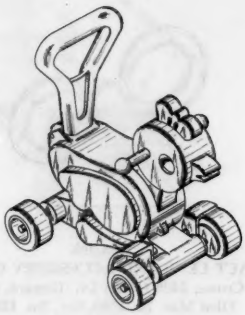


265,104
GAME BOARD
David G. de Keller, c/o The East India & Sports Club, 16, St. James's Sq., London, S.W.1., England
Filed Jul. 27, 1979, Ser. No. 61,453
Claims priority, application United Kingdom, Feb. 2, 1979, 79988385; Jul. 16, 1979, 79990713
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—40

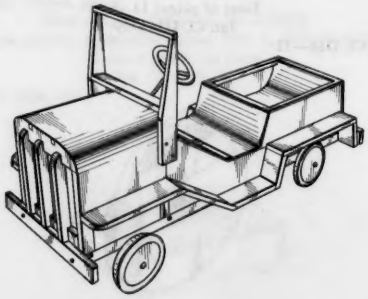
265,105
STEPPING PAD FOR A GAME
Alfred D. Arballo, 15840 Multiview Dr., Perris, Calif. 92370
Filed Apr. 28, 1980, Ser. No. 144,225
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—48



265,106
RIDING TOY
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 21, 1980, Ser. No. 170,483
Claims priority, application Japan, Jul. 5, 1979, 54-28255
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74



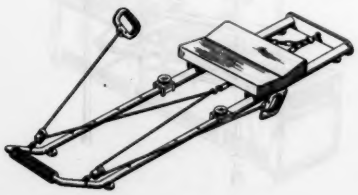
265,107
TOY AUTOMOBILE
Allan Landsman, 843 Maple La., East Meadow, N.Y. 11554
Filed Dec. 31, 1979, Ser. No. 108,664
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137



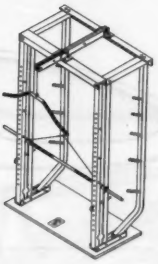
265,108
TOY FIGURE
George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley, and Philip Tippett, Oakland, all of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,463
Claims priority, application Taiwan, Apr. 29, 1981, 7031143
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

265,109
TOY FIGURE
Stuart Freeborn, Esher, England; George W. Lucas, Jr., San Anselmo, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,596
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—175

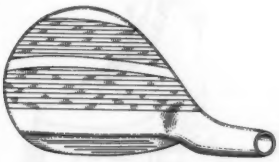
265,110
PHYSICAL EXERCISER
Jean-Pierre M. Lafont, 6, rue du Centre, Neuilly-sur-Seine, France
Filed Apr. 2, 1979, Ser. No. 26,182
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



265,111
PHYSICAL EXERCISER
Robert G. Lynn, 798 Holbrook Ave., Simi Valley, Calif. 93065
Filed Jul. 16, 1979, Ser. No. 57,950
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



265,112
GOLF CLUB HEAD
Charles J. Lyons, Jr., 3415 Clandara St., Las Vegas, Nev. 89121
Filed Sep. 18, 1980, Ser. No. 188,384
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—214

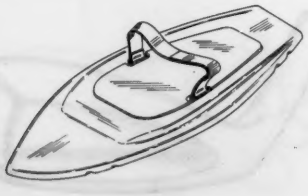


265,113
GOLF CLUB HEAD
Charles J. Lyons, Jr., 3415 Clandara St., Las Vegas, Nev. 89121
Filed Sep. 18, 1980, Ser. No. 188,386
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220

265,114
GOLF CLUB HEAD
Charles J. Lyons, Jr., 3415 Clandara St., Las Vegas, Nev. 89121
Filed Sep. 18, 1980, Ser. No. 188,387
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220

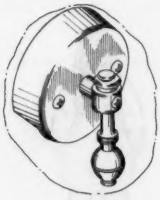
265,115
ROLLER SKATE
Eike Dornseif, Radevormwald, Fed. Rep. of Germany, assignor to Dornseif Sport Gesellschaft mit beschraenkter Haftung, Radevormwald, Fed. Rep. of Germany
Filed May 2, 1980, Ser. No. 146,175
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 7 MR 247
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226

265,116
AQUA PLANING BOARD
Robert L. Churchill, San Bernadino County, Calif., assignor to Kransco Manufacturing, Inc., South San Francisco, Calif.
Continuation-in-part of Ser. No. 868,133, Jan. 9, 1978. This application Feb. 19, 1980, Ser. No. 121,991
Term of patent 14 years
Int. Cl. D21—*99*
U.S. Cl. D21—228

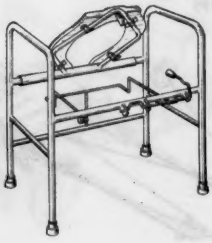


265,117
BATHROOM HANDLE OR THE LIKE
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,835
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29

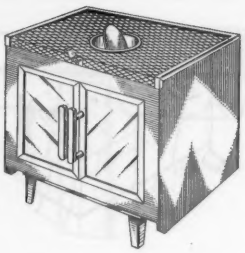
265,118
COMBINED BATHTUB DRAIN COVER AND HANDLE
Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,833
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31



265,119
STOOL FOR INVALIDS OR THE LIKE
Thomas P. Hurley, 180 Hastings Parade, North Bondi, New South Wales 2026, Australia
Filed Aug. 15, 1979, Ser. No. 66,877
Claims priority, application Australia, Apr. 30, 1979, 77710
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

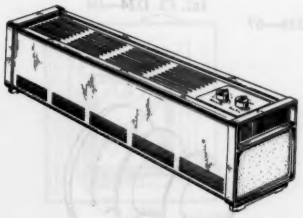


265,120
FREESTANDING WOOD BURNING STOVE
Joseph Henriques, 32 Hidden Brook Dr., Brookfield, Conn. 06804
Filed Aug. 13, 1979, Ser. No. 65,897
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



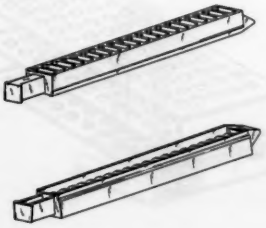
265,121
WOOD BURNING HEATER
Gerald T. Bergin, 122 2nd Ave. SE., Dilworth, Minn. 56529
Filed Jun. 6, 1980, Ser. No. 157,291
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

265,122
PORTABLE ELECTRIC HEATER
Donald L. Townsend, and Rex L. Notbohm, both of Columbia, Mo., assignors to Toastmaster, Inc., Columbia, Mo.
Filed May 21, 1979, Ser. No. 40,887
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122

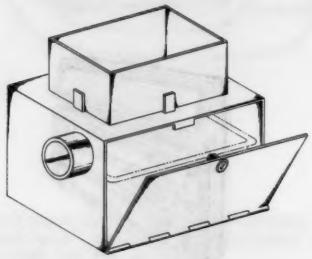


265,123
FRONT PANEL FOR AN AIR CONDITIONING UNIT
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 3, 1979, Ser. No. 63,647
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141

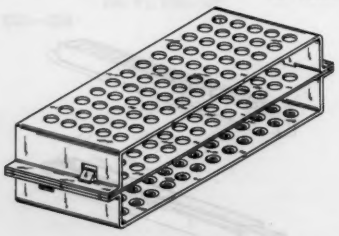
265,124
MULTIPLE CUVETTE ASSEMBLY
Harold S. Terk, Richardson, Tex., assignor to Abbott Laboratories, North Chicago, Ill.
Continuation-in-part of Ser. No. 946,303, Sep. 27, 1978, Pat. No. Des. 257,175. This application Mar. 19, 1979, Ser. No. 21,401
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



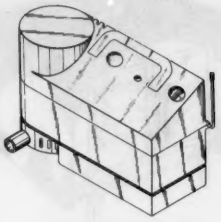
265,125
RECEPTACLE FOR SYRINGES AND OTHER SHARP ARTICLES WITH A TRASH COMPARTMENT ON TOP THEREOF
Alfred R. Jordan, 1118 E. U.S. 40, Craig, Colo. 81625
Filed Apr. 18, 1979, Ser. No. 31,197
Term of patent 14 years
Int. Cl. D24—*29*
U.S. Cl. D24—29



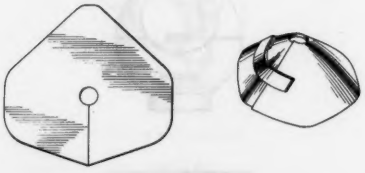
265,126
TEST TUBE RACK OR THE LIKE
Glenn L. Beall, Gurnee, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 8, 1980, Ser. No. 147,883
Term of patent 14 years
Int. Cl. D24—*02*; D6—*04*
U.S. Cl. D24—32



265,127
HYDROMASSAGE DEVICE
Morison S. Cousins, New York, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed Jun. 6, 1979, Ser. No. 46,200
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—38

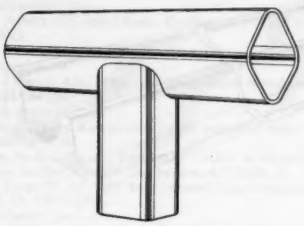


265,128
MAMMARY BANDAGE
David Foerster, Oklahoma City, Okla., assignor to Medical Engineering Corporation, Racine, Wis.
Filed Apr. 17, 1980, Ser. No. 141,085
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—49

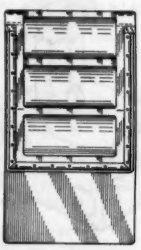


265,129
EAR PLUG WITH FLANGES
Charles Leight, 3511 Shoreheights Dr., Malibu, Calif. 90265
Filed Sep. 10, 1979, Ser. No. 74,385
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—67

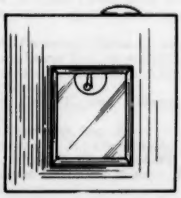
265,130
CONNECTING PIECE FOR FENCES
Tommy B. B. Persson, Allansgatan 54, S-214 65 Malmö, Sweden
Filed Dec. 23, 1977, Ser. No. 863,615
Claims priority, application Sweden, Jun. 23, 1977, 77-1404; Denmark, Dec. 22, 1977, 988/77; Finland, Dec. 22, 1977, 775/77; Norway, Dec. 22, 1977, 58812
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—44



265,131
STAIR FOR A SWIMMING POOL
Ronald C. Wallin, and Wesley A. Wallin, both of 132 Federal Rd., Danbury, Conn. 06810
Filed May 19, 1980, Ser. No. 151,194
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—63



265,132
HANDBAG LIGHT
Nolan R. Brooks, 12350 E. Del Amo Blvd. No. 1606, Lakewood, Calif. 90715
Filed May 4, 1979, Ser. No. 35,926
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—24

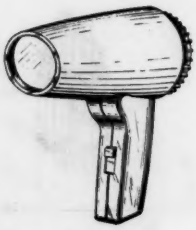


265,133
LAMP
John O. Black, 9607 Sturgeon Valley Rd., Vanderbilt, Mich. 49795
Filed Oct. 11, 1979, Ser. No. 83,807
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—70

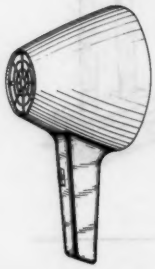
265,134
LAMP
Carlo S. Bessone, Woburn, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Dec. 28, 1979, Ser. No. 108,181
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93

265,135
LAMP
Carlo S. Bessone, Woburn, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Dec. 28, 1979, Ser. No. 108,201
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93

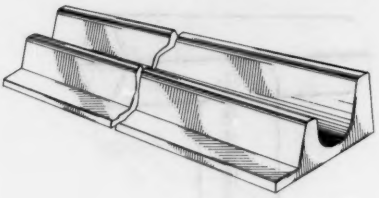
265,136
HAND HELD HAIR DRYER
Alfred W. Madl, Milwaukee, Wis., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jul. 11, 1980, Ser. No. 167,635
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



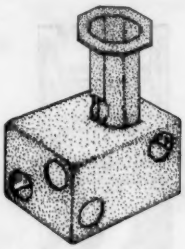
265,137
HAIR DRYER
Douglas G. Long, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jul. 14, 1980, Ser. No. 167,865
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



265,138
CATTLE FEED BUNKER
Richard E. Bunger, and Roy J. Hancock, both of Phoenix, Ariz., assignors to Corral Industries, Inc., Phoenix, Ariz.
Filed Jul. 14, 1980, Ser. No. 168,118
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



265,139
CAT PLAYGROUND OR THE LIKE
Nicholas J. Salvato, 1537 Stuyvesant Ave., Union, N.J. 07083
Filed Jun. 30, 1980, Ser. No. 164,680
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42



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TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JUNE, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abbott Laboratories: *See*—
Bujan, Albert F.; and Dawe, Garfield A., 4,335,717, Cl. 128-214.00G.
Bujan, Albert F., 4,335,866, Cl. 251-9.000.

Abe, Masaharu: *See*—
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Abe, Osame; Suda, Seiji; and Furuhashi, Toshio, to Hitachi, Ltd. Electronic type air/fuel ratio control system. 4,335,689, Cl. 123-339.000.

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Abex Corporation: *See*—
Kramer, William D.; and Born, Ellis H., 4,336,003, Cl. 417-217.000.

Abt, Richard F.; and Behrend, William L., to RCA Corporation. Linear loading for PWM filter. 4,336,615, Cl. 455-108.000.

Ackermann, Peter: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,336,266, Cl. 424-305.000.

Ackley, Edward M., deceased; Ackley, Edward M., executor; and Ackley, James B., executor, to R. W. Hartnett Co. Capsule turning apparatus (random spin printing). 4,335,810, Cl. 198-380.000.

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Ackley, James B., executor: *See*—
Ackley, Edward M., deceased; Ackley, Edward M., executor; and Ackley, James B., executor, 4,335,810, Cl. 198-380.000.

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Berdzar, Peter F.; and Acks, Robert S., 4,336,591, Cl. 364-418.000.

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Iyer, Raja, 4,336,179, Cl. 523-145.000.

Action Manufacturing Company: *See*—
Gal, Uzi, 4,335,643, Cl. 89-196.000.

Acu-Edge, Inc.: *See*—
Gunzner, Fred G., 4,335,630, Cl. 76-25.00R.

Adam, Jean-Marie; and Galafassi, Pierre, to Ciba-Geigy Corporation. Basic dioxazine compounds. 4,336,377, Cl. 544-74.000.

Adams, Richard C.: *See*—
Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., 4,336,012, Cl. 425-131.100.

Adams, Thomas E.; Murray, Walter D.; and Woolf, Raymond F., to Lockheed Corporation. Structural life computer. 4,336,595, Cl. 364-508.000.

Adams, Wade J., to Upjohn Company, The. Temperature controlled sample carrier. 4,335,620, Cl. 73-863.110.

Adeka Argus Chemical Co., Ltd.: *See*—
Nakahara, Yutaka; Shibata, Toshihiro; and Kubota, Naohiro, 4,336,183, Cl. 524-95.000.

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Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,336,211, Cl. 264-22.000.
Fukuta, Kenji; Onooka, Ryuzo; Aoki, Eiji; and Tsumuraya, Shigeo, 4,336,296, Cl. 428-257.000.
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Findeis, Gunter; Fergg, Berthold; Osegowitsch, Viktor; Huber, Hans P.; and Meckl, Heinz, 4,335,956, Cl. 355-27.000.
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Van Kampen, Craig L.; and Ahlberg, Carl S., 4,336,097, Cl. 156-527.000.

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Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., 4,336,238, Cl. 423-584.000.
Dalton, Augustine I., Jr.; and Skinner, Ronald W., 4,336,239, Cl. 423-584.000.
Moseley, Fred; and Dyer, Paul N., 4,336,240, Cl. 423-584.000.

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Denissenko, Serge; and Rossard, Jean-Claude, 4,336,024, Cl. 8-142.000.

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Motonami, Masanao; and Ishikawa, Yoshiaki, 4,335,902, Cl. 280-804.000.
Nishikawa, Masumi, 4,335,625, Cl. 74-493.000.
Sugimoto, Hitoshi, 4,335,579, Cl. 62-6.000.

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Maehara, Toshifumi; and Fujita, Tomohiro, 4,335,736, Cl. 137-87.000.

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Bratt, Sven-Erik; Nygaard, Kurt; and Nygards, Olof, 4,335,653, Cl. 102-202.800.
Bratt, Sven-Erik, 4,335,654, Cl. 102-202.800.
Winblad, Nils, 4,335,795, Cl. 180-6.200.

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Carlsson, Enar I.; Persson, Nils H. A.; Samuelsson, Gustav B. R.; and Wetterlin, Kjell I. L., 4,336,267, Cl. 424-309.000.

Akzona Incorporated: *See*—
Bos, Cornelis, 4,335,588, Cl. 66-125.00A.
Mellon, Regis B., 4,336,422, Cl. 179-18.0DA.

Alaimo, Robert J.; and Gray, Joseph E., to Morton-Norwich Products, Inc. 5-(2,4-Dichlorophenyl)-3-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime. 4,336,199, Cl. 549-496.000.

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Alexeev, Vasily I.: *See*—
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Junghanel, Arnold, 4,335,607, Cl. 73-290.00R.

Allen, Ron P. Combined plant container and watering device. 4,335,540, Cl. 47-79.000.

Allen, Terry S.; and Jacobson, Peter E., to Sperry Corporation. Multi-circuit rotary electrical conductor assembly. 4,335,927, Cl. 339-5.00R.

Alley, Francis P.; and Duffee, Michael T. Game transportation device. 4,335,891, Cl. 280-19.000.

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Aharoni, Shaul M., 4,336,343, Cl. 523-455.000.
Aharoni, Shaul M.; Prevorsek, Dusan C.; Schmitt, George J.; Harpell, Gary A.; and Lee, Lester T. C., 4,336,356, Cl. 525-388.000.
Diamond, Steven E.; Tovrog, Benjamin S.; Mares, Frank; and Tang, Reginald T., 4,336,241, Cl. 423-588.000.
Pez, Guido P., 4,336,162, Cl. 252-438.000.

Allred, Roe. Trotline guide. 4,335,534, Cl. 43-27.400.

Alm, Bernard D.: *See*—
Bubik, Leslie; Barclay, Stanley B.; Knaitner, Eugene L.; Williams, Frederic D. M.; and Alm, Bernard D., 4,335,772, Cl. 157-1.280.

Alps Electric Co., Ltd.: *See*—
Wakayama, Yoichi; and Kikuchi, Tadao, 4,336,419, Cl. 174-68.500.

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Altman, Daniel E.: *See*—
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Amaya, Nestor R.: *See*—
Buck, Rainer; Kopse, Odon; and Amaya, Nestor R., 4,335,601, Cl. 73-119.00A.

American Carrier Equipment, Inc.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,335,991, Cl. 414-519.000.

American Cyanamid Company: *See*—
Booth, James H.; and Ross, Adma S., 4,336,375, Cl. 544-027.000.

Giglia, Robert D.; and Huang, Sun Y., 4,335,938, Cl. 350-357.000.
Like, Burton M.; Smialowicz, Dennis; and Brandli, Eugene, 4,336,151, Cl. 252-106.000.
Like, Burton M.; Smialowicz, Dennis; and Brandli, Eugene, 4,336,152, Cl. 252-106.000.

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Lew, Yung, 4,336,558, Cl. 358-285.000.
Walls, John E.; Dragon, Robert L.; and Dunder, Thomas A., 4,336,113, Cl. 204-17.000.

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Koffler, Sol; and Berry, William M., 4,335,896, Cl. 280-47.170.

AMF Incorporated: *See—*
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Amigos Food Company, Inc.: *See—*
Velasco, Ralph E., Jr.; and Pinson, A. G., 4,335,649, Cl. 99-327.000.

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Abernethy, Lynn W., 4,335,929, Cl. 339-97.00R.
Casey, Daniel T., 4,335,497, Cl. 29-566.200.
Feldman, Steven, 4,335,930, Cl. 339-183.000.
Herrmann, Henry O., Jr., 4,335,932, Cl. 339-218.00M.
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Amphlett, Stephen L.: *See—*
Jackson, Thomas M.; Hodges, Robert J.; and Amphlett, Stephen L., 4,336,429, Cl. 200-67.0DB.

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Beigler, Myron A.; and Danby, Hal C., 4,335,835, Cl. 222-95.000.

Andersson, Anders G. T.: *See—*
Gylden, Nils O.; Karlen, Nial T.; Andersson, Jarl B. E.; and Andersson, Anders G. T., 4,336,209, Cl. 264-3.00R.

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Ando, Yujiro, to Canon Kabushiki Kaisha. Method for forming images using a photosensitive screen. 4,336,317, Cl. 430-53.000.

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Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,336,006, Cl. 418-131.000.

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Aoki, Eiji: *See—*
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Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,373, Cl. 542-447.000.
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ASEA Aktibolag: *See—*
Hanas, Bertil; and Stenkvist, Sven-Einar, 4,336,411, Cl. 373-85.000.

Ashcroft, Richard I.; and Kaktovics, David, to United Glass Limited. Apparatus for detecting the presence of surface irregularities in articles made of transparent material. 4,335,960, Cl. 356-240.000.

Ashland Oil, Inc.: *See—*
Dunnavant, William R.; and Kim, Young D., 4,336,342, Cl. 523-144.000.

Ashmore, Michael P.; How, Thien V.; and Rolfe, Peter, to Vickers Limited. Flowmeter. 4,335,617, Cl. 73-861.250.

Asko, Inc.: *See—*
Dempsey, Martin J., 4,336,083, Cl. 148-127.000.

Asperger, Dan A., to Dow Chemical Company, The. Method of preparing polyurethane foam carpet underlay having a barrier film attached thereto. 4,336,089, Cl. 156-152.000.

Associated Engineering Limited: *See—*
Noddings, John; and Borton, Roland K., 4,336,566, Cl. 361-242.000.

Atkin, Curtis L.: *See—*
Stephen, Robert L.; Kablitz, Carl; van Dura, Dietz; Atkin, Curtis L.; and Jacobsen, Stephen C., 4,335,716, Cl. 128-213.00A.

Atlantic Richfield Company: *See—*
Falcone, Samuel J.; and McCoy, John J., 4,336,402, Cl. 560-157.000.
Lordi, Frank E.; and Triplett, Jacob, 4,336,354, Cl. 525-301.000.

Attwood, Stanley W., to Motorola, Inc. MSK Demodulator frequency acquistion apparatus and method. 4,336,500, Cl. 329-50.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Kohler, Karl-Heinz, 4,335,599, Cl. 73-116.000.
van Bashuysen, Richard, 4,335,849, Cl. 237-12.30B.

Augerscope, Inc.: *See—*
Irwin, Lawrence F.; and Millray, Robert, 4,335,632, Cl. 81-446.000.

Aughton, John: *See—*
Stovell, John E.; Aughton, John; and Yi, Alberto, 4,335,939, Cl. 350-385.000.

Autologic, S.A.: *See—*
Morgan, Grant T., 4,335,940, Cl. 354-8.000.
Moyroud, Louis M.; and Morgan, Grant T., 4,335,941, Cl. 354-15.000.

Automation Industries, Inc.: *See—*
Timmons, David R., 4,335,647, Cl. 98-40.00D.

Avers, Daniel C.: *See—*
Knize, Elmer J.; and Avers, Daniel C., 4,335,827, Cl. 220-284.000.

Avon Products, Inc.: *See—*
Leon-Pekarek, Diane, 4,336,246, Cl. 424-70.000.

Axter, Sven E.: *See—*
Quist, William E.; Hyatt, Michael V.; and Axter, Sven E., 4,336,075, Cl. 148-2.000.

Ayer, Donald E.; and Schlagel, Carl A., to Upjohn Company, The. 17α-Acyloxy-5β-corticoids. 4,336,200, Cl. 260-397.450.

Aylott, Michael V.: *See—*
Payne, Alan J.; Aylott, Michael V.; Moore, Jimmie L.; and Yokley, Edward M., 4,336,260, Cl. 424-266.000.

Azzato, Robert N.; Staats, Henry N.; and Morrissey, Neal J., to General Binding Corporation. Restorable gang apparatus for telephone book binders. 4,335,659, Cl. 108-28.000.

B. F. Goodrich Company, The: *See—*
Cinadr, Bernard F., 4,336,351, Cl. 525-211.000.
Schwarz, David S., 4,336,298, Cl. 428-285.000.

B & H Manufacturing Company, Inc.: *See—*
Hoffmann, Wolfgang, 4,336,095, Cl. 156-361.000.

Babcock, Bryce: *See—*
Kalt, Charles G.; and Babcock, Bryce, 4,336,536, Cl. 340-783.000.

Babcock & Wilcox Company, The: *See*—
James, Harold S.; and Roseveare, Ronald N., 4,335,517, Cl. 33-174.00L.

Babiol, Pierre; and Gallais, Philippe, to Societe Nouvelle de Bouchons Plastiques. Flexible package for storing and dispensing liquid or pasty matters. 4,335,815, Cl. 206-277.000.

Bac, Jean-Claude, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Tanks and connecting ducts therefor. 4,335,905, Cl. 285-20.000.

Bachmann, Rainer, to Black & Decker Inc. Depth of cut adjustment mechanism. 4,335,768, Cl. 145-4.000.

Backhouse, Alan J.; Bromley, Charles; and Thompson, Morice W., to Imperial Chemical Industries Limited. Polymerization process. 4,336,177, Cl. 523-201.000.

Badalamenti, Michael J. Traction device for shoes. 4,335,529, Cl. 36-59.00R.

Badrock, John, to World Stress (Gas Contracts) Limited. Burners. 4,336,016, Cl. 431-158.000.

Bahr, Karl E., to Talon, Inc. Easy openable and closable bag with slide fastener. 4,335,817, Cl. 206-610.000.

Bailey, Howard S. Swimming pool liner supports and coping. 4,335,474, Cl. 4-506.000.

Bains, William R., to Ford Aerospace & Communications Corp. Ammunition round with retained piston. 4,335,657, Cl. 102-433.000.

Bajorek, Benjamin T., to Ford Motor Company. Induction hardening of valve seat inserts. 4,336,432, Cl. 219-10.410.

Baker, Geoffrey, to U.S. Philips Corporation. Radiation detector circuits which inhibit depoling of the detector. 4,336,452, Cl. 250-338.000.

Baker, Thomas E.; and Robertson, John P. Electrical totalizer. 4,336,445, Cl. 235-92.0ST.

Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG: *See*—
Lange, Karl-Heinz, 4,335,947, Cl. 354-230.000.

Baldwin, John J., to Merck & Co., Inc. Novel 2-pyridylbenzimidazole compounds. 4,336,257, Cl. 424-256.000.

Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Aryloxypropanolamines. 4,336,261, Cl. 424-273.00R.

Baldwin-Korthe Web Controls, Inc.: *See*—
Larson, Clifford L., 4,335,634, Cl. 83-13.000.

Ball Corporation: *See*—
Scholes, Addison B., 4,336,275, Cl. 427-27.000.

Banka, Eugene F.: *See*—
Goldis, Alexander; Sellen, Kenneth R.; and Banka, Eugene F., 4,336,037, Cl. 55-171.000.

Banzai, Keiichiro: *See*—
Tanaka, Shigeru; Iwaki, Katsutaro; Matsuhashi, Hajime; and Banzai, Keiichiro, 4,336,487, Cl. 322-99.000.

Barber, William R., Jr.: *See*—
Hahn, Frederick C.; Barber, William R., Jr.; and Hampel, David A., 4,335,532, Cl. 37-142.00R.

Barbieri, Stephen C.: *See*—
Mayer, Linda J.; and Barbieri, Stephen C., 4,336,114, Cl. 204-52.00R.

Barclay, Stanley B.: *See*—
Bubik, Leslie; Barclay, Stanley B.; Knaitner, Eugene L.; Williams, Frederic D. M.; and Alm, Bernard D., 4,335,772, Cl. 157-1.280.

Barcrest Limited: *See*—
Wain, John L., 4,335,809, Cl. 194-1.00R.

Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L. Vortex-type oil mist generator. 4,335,804, Cl. 184-55.00A.

Barker, Ray E.; Scott, Charles D.; and Ryon, Allen D., to United States of America, Energy. Process for separating coal synthesized methane from unreacted intermediate and contaminant gases. 4,336,044, Cl. 62-17.000.

Barnes, Michael W., to Thiokol Corporation. 2-Hydroxymethyl-1,3-propanediol preparation. 4,336,408, Cl. 568-853.000.

Barrett, David M.; Love, William D.; and Donaldson, Joseph L., to General Electric Company. High voltage connector for x-ray equipment. 4,335,928, Cl. 339-94.00C.

Bartoli, Francesco; Marconi, Walter; Morisi, Franco; and Pittalis, Francesco, to Snamprogetti, S.p.A. Superficially hydrolyzed biocompatible polyamide material. 4,336,357, Cl. 525-420.000.

Bartz, Gerald L., to Phillips Petroleum Company. Soil gas probe. 4,335,622, Cl. 73-864.740.

Baruffaldi Frizioni S.p.A.: *See*—
Boffelli, Pier C., 4,335,633, Cl. 82-31.000.

BASF Aktiengesellschaft: *See*—
Appl, Max; Wagner, Ulrich; Henrici, Hans J.; Kuessner, Klaus; Volkamer, Klaus; and Fuerst, Ernst, 4,336,233, Cl. 423-228.000.
Eicken, Karl; Rohr, Wolfgang; Goetz, Norbert; and Wuerzer, Bruno, 4,336,061, Cl. 71-92.000.
Feichtmayr, Franz; Naarmann, Herbert; Paust, Joachim; and Penzien, Klaus, 4,336,201, Cl. 260-410.90V.
Gimpel, Juergen; Feuerherd, Karl-Heinz; and Schenck, Hans-Uwe, 4,336,346, Cl. 525-109.000.
Jackel, Klaus-Peter; Heil, Gunter; and Spoor, Herbert, 4,336,309, Cl. 428-447.000.
Leutner, Bernd; Schlimper, Hans-Ulrich; Roth, Dieter; Kreitner, Ludwig; and Spahn, Heinrich, 4,336,234, Cl. 423-329.000.
Merger, Franz; and Fouquet, Gerd, 4,336,403, Cl. 560-211.000.
Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, 4,336,116, Cl. 204-159.110.
Steiner, Gerd; and Franke, Albrecht, 4,336,192, Cl. 260-239.30T.
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, 4,336,263, Cl. 424-244.000.
Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, 4,336,055, Cl. 71-76.000.

Bathelt, Werner: *See*—
Marquardt, Klaus; Eck, Herbert; and Bathelt, Werner, 4,336,172, Cl. 524-555.000.

Battelle Memorial Institute: *See*—
Patten, James W.; Moss, Ronald W.; and McClanahan, Edwin D., 4,336,118, Cl. 204-192.0EC.

Baudet, Pierre J. Cyano-ureas, cyano-thioureas and their preparation methods. 4,336,394, Cl. 548-342.000.

Bauer, Robert, to Miles Laboratories, Inc. Device for detecting glucose concentration. 4,336,330, Cl. 435-14.000.

Bauer, Werner R.; and Van Fossen, Robert A., to Robertshaw Controls Company. Reversing valve construction and piston head assembly therefor and methods of making the same. 4,335,750, Cl. 137-625.290.

Baxter Travenol Laboratories, Inc.: *See*—
Kartinos, Nicholas J., 4,336,157, Cl. 252-408.000.
Kulle, Lee K.; and Larson, Kenneth W., 4,335,770, Cl. 150-8.000.

Bayer Aktiengesellschaft: *See*—
Alberts, Heinrich; Friemann, Hans; Sattlegger, Hans; and Moretto, Hans-Heinrich, 4,336,358, Cl. 525-439.000.
Margotte, Dieter, 4,336,348, Cl. 525-146.000.
Petersen, Uwe; Voss, Eckart; and Stadler, Peter, 4,336,369, Cl. 536-13.900.
Recker, Klaus; and Grogler, Gerhard, 4,336,180, Cl. 524-847.000.
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, 4,336,214, Cl. 264-49.000.
Reischl, Artur; Quiring, Bernd; and Rathjen, Claus, 4,336,365, Cl. 528-44.000.

Baylor College of Medicine: *See*—
Wallis, Craig; and Melnick, Joseph L., 4,336,337, Cl. 435-292.000.

BBC, Brown, Boveri & Company, Limited: *See*—
Benz, Hans, 4,336,420, Cl. 174-128.00S.
Domer, Wolfgang, 4,335,923, Cl. 308-15.000.
Glavitsch, Hans; and Guth, Gerhard, 4,336,488, Cl. 323-215.000.
Kuse, Dieter; Wiederkehr, Heinz; and Winkler, Norbert, 4,336,456, Cl. 250-436.000.

Beatrice Foods Co.: *See*—
Chow, Ho, 4,335,852, Cl. 239-68.000.

Beatty, Bobby D.; Daniel, Russell D.; Hunderickhouse, Billy J.; and Williams, Richard, to United States of America, Navy. Underwater launched parachute flare. 4,335,656, Cl. 102-340.000.

Beck, Arnold A., to Goodyear Aerospace Corporation. Antiskid control system for brakes which exhibit large changes in lining friction coefficient. 4,336,592, Cl. 364-426.000.

Beck, Martin J.; and Boesel, George F. W., to Armstrong World Industries, Inc. Runner splicer bar. 4,335,973, Cl. 403-300.000.

Becker, Helmut: *See*—
Schnabl, Rudolf; and Becker, Helmut, 4,336,496, Cl. 324-158.00P.

Becker, Reinhold, to Hoechst Aktiengesellschaft. Device for filling a shirred tubular casing. 4,335,488, Cl. 17-33.000.

Beckerman, Howard L.; and Mauro, Charles L., to Singer Company, The. Pattern selection arrangement for a multiple pattern sewing machine. 4,335,667, Cl. 112-158.00E.

Beckwith, Jon: *See*—
Silhavy, Thomas J.; Shuman, Howard A.; Beckwith, Jon; and Schwartz, Maxime, 4,336,336, Cl. 435-172.000.

Becton, Dickinson and Company: *See*—
Calabrese, Frank B., 4,335,718, Cl. 128-218.00N.

Beecham Group Limited: *See*—
Hadley, Michael S.; and King, Francis D., 4,336,259, Cl. 424-265.000.

Beeghly, Bruce R., to Economy Engine Company, The. Annunciator. 4,336,463, Cl. 307-66.000.

Behrend, William L.: *See*—
Abt, Richard F.; and Behrend, William L., 4,336,615, Cl. 455-108.000.

Beigler, Myron A.; and Danby, Hal C., to Anatros Corporation. Device for the intravenous or enteric infusion of liquids into the human body at a predetermined constant rate. 4,335,835, Cl. 222-95.000.

Bekku, Norikatsu: *See*—
Edamura, Mizuo; Takamoto, Shyunji; Furuitsu, Satoshi; Bekku, Norikatsu; and Katayama, Toshiaki, 4,336,076, Cl. 148-3.000.

Belcher, Richard A.: *See*—
Kozacka, Frederick J.; and Belcher, Richard A., 4,336,521, Cl. 337-248.000.

Belfor, Mikhail G.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Bell Telephone Laboratories, Incorporated: *See*—
Brantley, William C.; and Edington, John E., 4,336,582, Cl. 363-15.000.
Leddy, Ernest J., 4,336,288, Cl. 428-35.000.
Lisco, Richard J., 4,336,467, Cl. 307-350.000.
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,336,506, Cl. 372-62.000.

Belli, Aldo: *See*—
Giordano, Claudio; and Belli, Aldo, 4,336,396, Cl. 560-20.000.

Bellmann, Bernhard: *See—*
Wermeister, Gunter; and Bellmann, Bernhard, 4,335,983, Cl. 407-41.000.

Beloit Corporation: *See—*
Locke, Stephen A., 4,335,603, Cl. 73-159.000.

Benassi, GianCarlo, to Fiat Trattori S.p.A. Sealing device for use with flexible dynamometric bars. 4,335,887, Cl. 277-84.000.

Bendix Corporation, The: *See—*
Anastasia, Harry G., 4,336,567, Cl. 361-283.000.
Cramer, Robert L.; and Henneberger, Roy L., 4,335,735, Cl. 137-81.100.
Grabb, Frederick G., 4,336,004, Cl. 417-283.000.
Phipps, Jack R., 4,335,695, Cl. 123-478.000.

Benedetto, Joseph M. Modular bake oven for drying varnished electrical components. 4,336,443, Cl. 219-400.000.

Benjamin, Martin E.: *See—*
Cather, Douglas A., Jr.; and Benjamin, Martin E., 4,335,889, Cl. 277-152.000.

Benkelman, William D.; and Carlyon, George C., to Dayco Corporation. Skylight construction and method of making same. 4,335,551, Cl. 52-200.000.

Bennett, Robert S.; and Griffiths, William E., to Ferranti Limited. Accelerometer. 4,335,611, Cl. 73-517.00B.

Benning, Leroy J.; and Thorman, Charles A. Bottle carton with integral opener. 4,335,814, Cl. 206-198.000.

Bentley-Harris Manufacturing Co.: *See—*
Flasher, Gary L., 4,335,589, Cl. 66-202.000.

Benz, Hans, to BBC, Brown, Boveri & Company, Limited. Superconducting cable. 4,336,420, Cl. 174-128.00S.

Berdzar, Peter F.; and Acks, Robert S., to United States of America, Navy. Maximum depth monitoring apparatus. 4,336,591, Cl. 364-418.000.

Berginski, Werner E., to Leopold Kostal, Firma. Steering column assembly switch for automotive vehicles. 4,336,428, Cl. 200-61.540.

Bergmann, Gerhard; and Wade, Heinz, to Karl Mayer Textilmaschinenfabrik GmbH. Guidebar shogging linkage arrangement for warp knitting machines. 4,335,590, Cl. 66-207.000.

Bergmann, Hans; Bormann, Rudiger; Freyhardt, Herbert C.; and Mordike, Barry L. Method for the manufacture of a composite material by powder metallurgy. 4,336,065, Cl. 75-200.000.

Berisch, Volker; and Keiner, Karl, to ITT Industries, Inc. Pressure control unit. 4,335,922, Cl. 303-6.00C.

Berlin, Daniel, to Roblin Industries, Inc. Cart with improved storage-preventing base. 4,335,892, Cl. 280-33.99R.

Berner, Godwin; and Kirchmayr, Rudolf, to Ciba-Geigy Corporation. Thermally polymerizable mixtures and processes for the thermally-initiated polymerization of cationically polymerizable compounds. 4,336,366, Cl. 528-89.000.

Berney, Jean-Claude, to Ebauches S.A. Electronic timepiece. 4,336,608, Cl. 368-82.000.

Bernhardt, Donn E.; and McCulley, Lowell D., Jr., to Honeywell Information Systems Inc. Error correction apparatus and method. 4,336,611, Cl. 371-38.000.

Bernitz, Franz, to Bosch-Siemens Hausgerate GmbH. Oscillation generator for an ultrasonic liquid atomizer. 4,336,509, Cl. 331-114.000.

Berry, William M.: *See—*
Koffler, Sol; and Berry, William M., 4,335,896, Cl. 280-47.170.

Bertelsen, Corey A., to Chevron Research Company. Process for burning retorted oil shale and improved combustor. 4,336,126, Cl. 208-11.00R.

Bertelsen, Corey A., to Chevron Research Company. Staged burning of retorted carbon-containing solids. 4,336,127, Cl. 208-11.00R.

Bertsch, Dieter: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,336,006, Cl. 418-131.000.

Bertsch, Richard: *See—*
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.

Bessay, Raymond: *See—*
Riollet, Gilbert; and Bessay, Raymond, 4,335,995, Cl. 415-144.000.

Bessett, Clifford H.; and Misdom, Theodore H., to Packaging Corporation of America. Carton for fragile articles. 4,335,813, Cl. 206-45.330.

Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., to Nuclear Assurance Corp. Spent fuel cask. 4,336,460, Cl. 250-506.000.

Bethe, Hans A.; and Chang, Ching S., to Jersey Nuclear-Avco Isotopes, Inc. Frequency chirp in isotopically selective photoexcitation. 4,336,230, Cl. 423-3.000.

Bey, Roger, to Control Components, Inc. Quiet safety relief valve. 4,335,744, Cl. 137-522.000.

Bhandari, Vijay: *See—*
Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., 4,336,460, Cl. 250-506.000.

Bianchini, Asuncion E.: *See—*
Coll, Antonio L. P.; Meseguer, Jose D.; Bianchini, Asuncion E.; and Pitarch, Esteve S., 4,336,376, Cl. 544-030.000.

Bice, Howard W.; and Williams, Don W., to Gust, Irish, Jeffers & Hoffman. Apparatus and method for converting electrical energy into heat energy. 4,336,444, Cl. 219-505.000.

Biddlecom, William G.; Kluender, Harold C.; and Woessner, Warren D., to Miles Laboratories, Inc. 1-Acyloxy-15-deoxy-16-hydroxy-analogs of prostaglandin E_1. 4,336,404, Cl. 560-231.000.

Biehl, Brian L.; and Lieberman, Stuart I., to Radiation Engineering Inc. Integrated nuclear radiation detector and monitor. 4,336,532, Cl. 340-600.000.

Bielli, Paolo; De Padova, Salvatore; and Savini, Dario, to CSELT, Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and system for tracking an object radiating a circularly or linearly polarized electromagnetic signal. 4,336,542, Cl. 343-100.0PE.

Bieringer, Hermann; and Handte, Reinhard, to Hoechst Aktiengesellschaft. Herbicides. 4,336,057, Cl. 71-88.000.

Bihlmaier, John A. Pneumatic-hydraulic actuator system. 4,335,867, Cl. 251-28.000.

Bill, Robert C.; and Wisander, Donald W., to United States of America, National Aeronautics and Space Administration. Fully plasma-sprayed compliant backed ceramic turbine seal. 4,336,276, Cl. 427-34.000.

Billett, Ronald J., to FMC Corporation. Apparatus for freezing confections. 4,335,583, Cl. 62-345.000.

Binks Manufacturing Company: *See—*
Lamontagne, Robert E.; and Scull, Jon V., 4,335,999, Cl. 417-38.000.

Biotest-Serum-Institut GmbH: *See—*
Bonhard, Klaus; and Boysen, Uwe, 4,336,248, Cl. 424-101.000.

Birger Company, The: *See—*
DiPierro, Michael A.; and Roche, David E., 4,335,487, Cl. 16-126.000.

Bisk, Leonard; and Rogahn, Gunther, to Independent Products Company, Inc. Skirt and trouser clip for hanger. 4,335,838, Cl. 223-91.000.

Bittmann, Peter: *See—*
Rapp, Joachim; and Bittmann, Peter, 4,335,966, Cl. 366-2.000.

Black & Decker Inc.: *See—*
Bachmann, Rainer, 4,335,768, Cl. 145-4.000.
Close, Albert R.; and Oster, Winton, 4,335,510, Cl. 30-276.000.
Overy, Colin; and Dynie, Ernest R., 4,335,514, Cl. 30-382.000.

Black, Philip W.; and Irven, John, to International Standard Electric Corporation. Single mode fibre and method of making. 4,335,934, Cl. 350-96.330.

Blair, Winford, to Rohr Industries, Inc. Multi-layer honeycomb thermo-barrier material. 4,336,292, Cl. 428-116.000.

Blanchett, Paul T.; and Blanchett, Philip J. Glazing bead. 4,335,552, Cl. 52-202.000.

Blanchett, Philip J.: *See—*
Blanchett, Paul T.; and Blanchett, Philip J., 4,335,552, Cl. 52-202.000.

Blasinachim S.p.A.: *See—*
Giordano, Claudio; and Belli, Aldo, 4,336,396, Cl. 560-20.000.

Blount, David H. Process for the production of broken-down organic lignin-cellulose polymers. 4,336,340, Cl. 521-84.000.

Blue Circle Industries Limited: *See—*
Bye, Gerald C., 4,336,142, Cl. 210-724.000.

Blum, Christian: *See—*
Winker, Gerald; Thrandorf, Hans-Peter; and Blum, Christian, 4,335,674, Cl. 118-110.000.

Blum, Jean. Derivatives of eugenol as medicaments. 4,336,258, Cl. 424-263.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain olefinic alcohols useful in perfume compositions. 4,336,164, Cl. 252-522.00R.

Bodle, William W.: *See—*
Weil, Sanford A.; Punwani, Dharamvir; and Bodle, William W., 4,336,125, Cl. 208-8.00R.

Boeck, LaVerne D.: *See—*
Hamill, Robert L.; Hoehn, Marvin M.; and Boeck, LaVerne D., 4,336,333, Cl. 435-75.000.

Boeing Company, The: *See—*
Graunke, Donald R., 4,336,111, Cl. 204-1.00T.
Hilton, R. John, 4,336,090, Cl. 156-154.000.
Hoole, Tyson C. A., 4,336,499, Cl. 328-188.000.
Jones, Earle H., 4,335,807, Cl. 191-32.000.
Quist, William E.; Hyatt, Michael V.; and Axter, Sven E., 4,336,075, Cl. 148-2.000.
Stachowiak, Claude R.; and Kunze, Fred R., 4,335,801, Cl. 181-213.000.
Warner, Gary J.; and Meldahl, Kenneth R., 4,335,671, Cl. 114-274.000.

Boesel, George F. W.: *See—*
Beck, Martin J.; and Boesel, George F. W., 4,335,973, Cl. 403-300.000.

Boettcher, Charles W., Jr.; and Schroeder, Robert E. High efficiency turn-off loss reduction network with active discharge of storage capacitor. 4,336,587, Cl. 363-134.000.

Boffelli, Pier C., to Baruffaldi Frizioni S.p.A. Tailstock for machine tools, in particular lathes or the like with electric actuator having a monitored thrust. 4,335,633, Cl. 82-31.000.

Boland, Robert P.: *See—*
Stromswold, Chester E.; Martel, Robert T.; Apostolos, John; and Boland, Robert P., 4,336,511, Cl. 331-178.000.

Boley, Jack W., to Texas Oil and Gas Corporation. Wellhead bunker. 4,335,740, Cl. 137-364.000.

Bonanno, Anthony J.: *See—*
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,336,101, Cl. 159-16.00S.

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Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., 4,336,012, Cl. 425-131.100.

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Kramer, William D.; and Born, Ellis H., 4,336,003, Cl. 417-217.000.
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Kiefer, Henry, 4,335,873, Cl. 269-228.000.
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Carmichael, Lee T.; Hyde, Richard E.; and Smith, Gary L., 4,335,893, Cl. 280-42.000.
Campbell, Stephen J.; Hambly, Warren E.; and Harrison, George C., to Polaroid Corporation. Controlled inductive storage DC-to-DC converter. 4,336,583, Cl. 363-21.000.
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Savard, Guy; and Lee, Robert G. H., 4,336,064, Cl. 75-60.000.
Canadian Patents & Dev. Limited: *See—*
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Ando, Yujiro, 4,336,317, Cl. 430-53.000.
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Tsuchiya, Hiroaki; and Soma, Ikuo, 4,335,953, Cl. 355-14.0CH.
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Carter, Leonard C. Illuminated skate. 4,336,573, Cl. 362-78.000.
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Isui, James B. Y.; Shaw, Rudy L.; and Caschera, Joseph, 4,336,541, Cl. 343-18.00E.
Casey, Alton W.: *See—*
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Garman, Ronald H.; and Welker, Gerald H., 4,335,624, Cl. 74-482.000.
Leach, J. Michael; and Harvey, Walter L., 4,336,077, Cl. 148-3.000.
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Payne, Harry R., 4,335,832, Cl. 221-67.000.
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Winter, Karl, 4,336,159, Cl. 252-411.00R.
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Forschirm, Alex S., 4,336,287, Cl. 428-35.000.
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Copithorne, Alton R., 4,335,479, Cl. 10-18.000.
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Heidingher, Alexandru; and Sinko, Ioan, 4,336,178, Cl. 523-206.000.
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Smith, Lawrence A., Jr., 4,336,407, Cl. 568-697.000.
Chen, Tsong M.; Heiba, El-Ahmadi I.; and John, William W., to Mobil Oil Corporation. Method of using corn syrup for reducing phytotoxicity of urea applied to plants for foliar fertilization. 4,336,052, Cl. 71-28.000.
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Erdman, Timothy R., 4,336,149, Cl. 252-56.00R.
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Muntwyler, Rene, 4,336,270, Cl. 424-347.000.
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 4,336,148, Cl. 252-49.700.
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Okada, Masataka; and Shiun, Toshimi, 4,336,554, Cl. 358-124.000.
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Swisher, George W., Jr.; and Steele, Thomas L., 4,335,921, Cl. 299-86.000.
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Harvill, William A., 4,335,836, Cl. 222-108.000.
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Conservation Technologies, Inc.: *See—*
Terrell, George C., 4,335,663, Cl. 110-264.000.
Continental Group, Inc., The: *See—*
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., 4,335,821, Cl. 215-1.00C.
Control Components, Inc.: *See—*
Bey, Roger, 4,335,744, Cl. 137-522.000.
Control Data Corporation: *See—*
Kruger, Lawrence M., 4,336,602, Cl. 364-900.000.
Conway, Walter D.: *See—*
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., 4,336,400, Cl. 560-73.000.
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Cooley, Denton A.: *See—*
Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., 4,335,756, Cl. 138-89.000.
Cooney, James G.: *See—*
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Cooper Industries: *See—*
Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., 4,335,963, Cl. 366-63.000.
Copithorne, Alton R., to Celus Fasteners Manufacturing, Inc. Method and apparatus for making blind rivets. 4,335,479, Cl. 10-18.000.
Cormier, Joseph A. Curtain rod bracket. 4,335,865, Cl. 248-558.000.
Cornelius Company, The: *See—*
Harvill, William A., 4,335,836, Cl. 222-108.000.
Cornell Pump Company: *See—*
Frey, Max; and Krebs, Paul B., 4,335,886, Cl. 277-25.000.
Corning Glass Works: *See—*
McBrayer, Robert D.; and Pujari, Vimal K., 4,335,783, Cl. 165-8.000.
Rittler, Hermann L., 4,336,303, Cl. 428-334.000.
Couch, James L. Inflatable tent. 4,335,545, Cl. 52-2.000.
Courvoisier, Guy, to Officine Savio S.p.A. Device to remove bobbins for an open-end spinning machine. 4,335,859, Cl. 242-35.50A.
Cowles, Warren H., to Colt Industries Operating Corp. Fuel injection apparatus and system. 4,335,693, Cl. 123-438.000.
Cowley, Gerald, to ERCO Industries Limited. Chlorine dioxide generator. 4,336,228, Cl. 422-129.000.
Cox, Robert D.: *See—*
Frank, Clyde W.; Nord, Paul J.; and Cox, Robert D., 4,336,158, Cl. 252-408.000.
Crabtree, Daniel B. Lighting apparatus. 4,336,576, Cl. 362-240.000.
Crafco, Inc.: *See—*
Robinson, J. Ronald, 4,335,560, Cl. 53-440.000.
Cragoe, Edward J., Jr.; Patchett, Arthur A.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 2,4-Dioxo-4-substituted-1-butanoic acid derivatives useful in treating urinary tract calcium oxalate lithiasis. 4,336,397, Cl. 560-51.000.
Craigie, Laurence J., to Dow Chemical Company, The. Compositions of thermosettable resins and polydiene rubbers having improved solution stability. 4,336,344, Cl. 525-31.000.
Cramer, Robert L.; and Henneberger, Roy L., to Bendix Corporation, The. Automatic diluter/demand oxygen regulator adapted for chemical or biological use. 4,335,735, Cl. 137-81.100.
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Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., 4,335,756, Cl. 138-89.000.
Cranna, Darlene K. N., to International Business Machines Corporation. Apparatus for threading tape over a tape path including a channel conforming to said path. 4,335,858, Cl. 242-195.000.
Crathern Engineering Co., Inc.: *See—*
Mills, Leland F., 4,336,094, Cl. 156-299.000.
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Seitz, Hermann, 4,335,958, Cl. 355-48.000.
Creeden, Richard L.: *See—*
Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., 4,336,460, Cl. 250-506.000.
Criswell, Robert L.; and Polagye, Michael C., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger with control to respond to changes in demand. 4,335,683, Cl. 122-4.00D.
Crivello, James V., to General Electric Company. Heat curable compositions containing sulfonium salts. 4,336,363, Cl. 526-333.000.
Crosfield Electronics Limited: *See—*
Stovell, John E.; Aughton, John; and Yi, Alberto, 4,335,939, Cl. 350-385.000.
CSELT, Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Bielli, Paolo; De Padova, Salvatore; and Savini, Dario, 4,336,542, Cl. 343-100.0PE.
Csernyanszky, Imre: *See—*
Lorant, Ivan; Csernyanszky, Imre; Murlasits, Gyula; Rusznyak, Rezso; and Szabo nee Paulyuk, Paula, 4,336,300, Cl. 428-316.600.
Cummings, John P.; Makos, Janice D.; and Pitkanen, David E., to Honeywell Inc. Process for dielectric stenciled microcircuits. 4,336,320, Cl. 430-198.000.
Cunningham, Douglas J., to BSG International Limited. Vehicle safety seat. 4,335,918, Cl. 297-216.000.
Cyborex Laboratories, Inc.: *See—*
Hedges, Walter P.; and Sullivan, C. Gardner, II, 4,336,462, Cl. 307-35.000.
Czech, James I., to Whirlpool Corporation. Centrifugal switch actuator for a motor. 4,336,472, Cl. 310-68.00E.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Fujiwara, Tsuyoshi; Sugimoto, Osamu; and Isoda, Chuzo, 4,336,341, Cl. 521-109.000.
Daicel Chemical Industries, Ltd.: *See—*
Watanabe, Morio, 4,335,528, Cl. 36-30.00R.
Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., to Air Products and Chemicals, Inc. Process for producing hydrogen peroxide. 4,336,238, Cl. 423-584.000.
Dalton, Augustine I., Jr.; and Skinner, Ronald W., to Air Products and Chemicals, Inc. Synthesis of hydrogen peroxide. 4,336,239, Cl. 423-584.000.
Dalton, Raymond F., to Imperial Chemical Industries Limited. Copper extraction with either salicylaldoximes or benzophenone oximes and alkylphenols. 4,336,231, Cl. 423-24.000.
Damaschini, Pietro. Composite lounge chair structure. 4,335,475, Cl. 5-14.000.
D'Amico, John J., to Monsanto Company. N-Substituted benzothiazolines and benzoxazolines and their use as herbicides and plant growth regulants. 4,336,060, Cl. 71-90.000.
Damico, Pierre: *See—*
Jacq, Georges; and Damico, Pierre, 4,336,590, Cl. 364-418.000.
Danborg, Ole E.: *See—*
Jorgensen, Hans; Sinnerup, Ib O.; and Danborg, Ole E., 4,336,000, Cl. 417-53.000.
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Danevicz, Robert T.: *See—*
Smith, Charles A.; and Danevicz, Robert T., 4,336,589, Cl. 364-403.000.
Daniel, Russell D.: *See—*
Beatty, Bobby D.; Daniel, Russell D.; Humerickhouse, Billy J.; and Williams, Richard, 4,335,656, Cl. 102-340.000.
Darche, Michel, to Societe ECA. Device for ensuring dynamic tightness, particulary for Stirling engine. 4,335,884, Cl. 277-3.000.
Daughton, John W.: *See—*
Kukucka, William P.; and Daughton, John W., 4,335,949, Cl. 355-3.00R.
Davey, Kent R., to Westinghouse Electric Corp. Phase interleaved peripheral connector ring end winding. 4,336,474, Cl. 310-179.000.
Davis, Edward L. Product and method of forming patterned areas in a pile rug. 4,336,289, Cl. 428-67.000.
Davis, Jerry P., to Thermo Electron Corporation. Micronized coal-water fuel slurry for reciprocating internal-combustion engines. 4,335,684, Cl. 123-1.00A.
Davis, Lawny; and Preble, Derwood. Apparatus and method for delimbing felled trees. 4,335,766, Cl. 144-343.000.
Dawe, Garfield A.: *See—*
Bujan, Albert F.; and Dawe, Garfield A., 4,335,717, Cl. 128-214.00G.
Dayco Corporation: *See—*
Benkelman, William D.; and Carlyon, George C., 4,335,551, Cl. 52-200.000.
De La Rue Systems Limited: *See—*
Shier, Ron; and Doyle, Roger F. E., 4,335,874, Cl. 271-95.000.
Deabriges, Jean, to Produits Chimiques Ugine Kuhlmann. Process for the manufacture of sodium silicate. 4,336,235, Cl. 423-332.000.
Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W. Method and apparatus for cracking residual oils. 4,336,160, Cl. 252-417.000.
Dean, Robert W., Jr., to Designer Blocks, Inc. Method, building structure and side-split block therefore. 4,335,549, Cl. 52-98.000.
Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, to Societe Chimique des Charbonnages S.A. Device for regulating a gaseous flowstream introduced into a spouted bed granulating and/or coating apparatus. 4,335,676, Cl. 118-303.000.
Debs, Victor, to Levolor Lorentzen, Inc. Tassel weight. 4,335,776, Cl. 160-320.000.
DECHEMA: *See—*
Kalfa, Horst; Schubert, Bruno; Brunmayer, Peter; and Gellermann, Siegfried, 4,335,615, Cl. 73-799.000.
DeCou, Donld F., Jr.: *See—*
Holland, William P.; and DeCou, Donld F., Jr., 4,336,476, Cl. 313-60.000.
Dedekind, Gerd. Belt press apparatus with heat shield. 4,336,096, Cl. 156-498.000.
Deere & Company: *See—*
Adickes, Henning, 4,335,798, Cl. 180-90.000.
Korbel, Adrian C., 4,335,914, Cl. 294-86.00R.
Lobmeyer, Raymond J.; and Miller, James A., 4,335,577, Cl. 60-421.000.
Smith, Frank R., 4,335,796, Cl. 180-53.00D.
Dehmer, Klaus: *See—*
Mundnich, Rainer; Finke, Manfred; Rupp, Walter; and Dehmer, Klaus, 4,336,206, Cl. 260-465.400.
Del Monte Corporation: *See—*
Lee, Chi-Hang, 4,336,273, Cl. 426-321.000.
Della Rovere, Ludovico L. Sheet-metal target pigeon. 4,335,882, Cl. 273-363.000.
Delta Kogyo Co., Ltd.: *See—*
Izuno, Sadami; and Kiyomitsu, Isao, 4,335,917, Cl. 297-366.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; Wichmann, Joseph K.; and Fivizzani, Mary A., to Wisconsin Alumni Research Foundation. Process for preparing vitamin D-lactones. 4,336,193, Cl. 260-239.570.
deMey, Charles F., II, to Perkin-Elmer Corporation, The. Recorder paper drive. 4,335,971, Cl. 400-619.000.
Dempsey, Martin J., to Asko, Inc. Method of producing knife for cutting hot metal. 4,336,083, Cl. 148-127.000.
Denissenko, Serge; and Rossard, Jean-Claude, to Airwick Industries, Inc. Process for cleaning clothes at home. 4,336,024, Cl. 8-142.000.
Denk, Hans: *See—*
Reeh, Ulrike; and Denk, Hans, 4,336,167, Cl. 523-451.000.
den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; and Merrell, Richard G., to Oak Industries. Method of coding audio and video signals. 4,336,553, Cl. 358-120.000.
De Padova, Salvatore: *See—*
Bielli, Paolo; De Padova, Salvatore; and Savini, Dario, 4,336,542, Cl. 343-100.0PE.
de Pous, Bernard, to Zodiac. Water reservoirs, particularly swimming pools. 4,335,473, Cl. 4-488.000.
DePriester, Coral L., to Chevron Research Company. Hull heating system for an arctic offshore production structure. 4,335,980, Cl. 405-217.000.
Designer Blocks, Inc.: *See—*
Dean, Robert W., Jr., 4,335,549, Cl. 52-98.000.
Desty, Denis H., to British Petroleum Company Limited, The. Flare with inwardly directed Coanda nozzle. 4,336,017, Cl. 431-202.000.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Kochendorfer, Richard; and Vogler, Helmut, 4,335,586, Cl. 464-81.000.
Devaud, Gerard: *See—*
Bouveret, Marcel; and Devaud, Gerard, 4,335,745, Cl. 137-554.000.
de Volo, Nick B.: *See—*
Maloney, Kenneth L.; and de Volo, Nick B., 4,335,660, Cl. 110-206.000.
DeVries, Adrian J.; and Hansen, Kai, to Zenith Radio Corporation. Acoustic filter with harmonic rejection. 4,336,515, Cl. 333-195.000.
de Vries, Jacob, to LGZ Landis & Gyr Zug AG. Pulse width generator having a variable mark-to-space ratio. 4,336,512, Cl. 332-9.00R.
d'Hondt, Christian; Lohmann, Dieter; and Neuenschwander, Ernst, to Ciba-Geigy Corporation. Salts of 3-methyl-2-(2',4'-dimethylphenylimino)-4-thiazoline with polymers containing sulfonic acid groups. 4,336,353, Cl. 525-275.000.
Diamond, Steven E.; Tovrog, Benjamin S.; Mares, Frank; and Tang, Reginald T., to Allied Corporation. Process for hydrogen peroxide production from hydrogen and oxygen. 4,336,241, Cl. 423-588.000.
Dickson, William R.: *See—*
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Didier Engineering GmbH: *See—*
Wunderlich, Egmar; Meckel, Joachim; Wagener, Dietrich; and Smieskol, Stefan, 4,336,229, Cl. 422-148.000.
Diederich, Paul W., Jr. Coupling adapter for fluid cooling and filtering. 4,335,688, Cl. 123-196.00A.
Diehl GmbH & Co.: *See—*
Hafner, Dieter, 4,336,446, Cl. 235-92.0DE.
Diener, Arnulf; Laucht, Walter; and Icking, Eugen, to Hoesch Werke Aktiengesellschaft. Cooling element for use in metallurgical furnaces. 4,335,870, Cl. 266-193.000.
Dierks, Raymond W., deceased; by Noviello, Nicholas, Jr., executor; and by Glass, Seymour, executor. Carrier sheet with envelope letter sheet device secured thereto. 4,335,845, Cl. 229-69.000.
Dignan, Donald J.: *See—*
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Di Matteo, Paul; and Ross, Joseph A., to Robotic Vision Systems, Inc. Method and apparatus for determining spatial information. 4,335,962, Cl. 356-376.000.
Dinkelacker, Albrecht, to Max-Planck-Gesellschaft zur Forderung der Wissenschaft e. V. Method and apparatus for cleaning drains. 4,336,074, Cl. 134-8.000.
DiPierro, Michael A.; and Roche, David E., to Birger Company, The. Supporting handle. 4,335,487, Cl. 16-126.000.
DITO: *See—*
Prevot, Olivier H. C., 4,335,650, Cl. 99-593.000.
Dix, Kurt. Closure assembly for horizontal-chamber coking ovens. 4,336,108, Cl. 202-248.000.
Dixon, Dennie W.: *See—*
Schorre, Kenneth R.; Nye, James O.; Dixon, Dennie W.; and Nepute, Carl, 4,336,046, Cl. 62-28.000.
Dodson, Vance H.; and Roberts, Lawrence R., to W. R. Grace & Co. High strength aggregate for concrete. 4,336,069, Cl. 106-97.000.
Dolhyj, Serge R.; and Pepera, Marc A., to Standard Oil Company, The. Preparation of maleic anhydride using coated catalysts containing high loading of active phase. 4,336,198, Cl. 549-259.000.
Domain Building Systems Corporation: *See—*
Caldwell, Charles A.; and Dickson, William R., 4,335,558, Cl. 52-13.000.
Domer, Wolfgang, to BBC Brown, Boveri & Company Limited. Bearing housing support. 4,335,923, Cl. 308-15.000.
Dominguez-Ahedo, Carlos: *See—*
Guzman-Bofill, Carlos; and Dominguez-Ahedo, Carlos, 4,336,063, Cl. 75-35.000.
Donald, David K.; Lee, Michael J.; and Vaught, John L., to Hewlett-Packard Company. Method and apparatus for drop-on-demand ink jet printing. 4,336,544, Cl. 346-1.100.
Donaldson, Joseph L.: *See—*
Barrett, David M.; Love, William D.; and Donaldson, Joseph L., 4,335,928, Cl. 339-94.00C.
Donnelly, Thomas H.: *See—*
Kang, Chunghee K.; Jodlowski, Ronald F.; Donnelly, Thomas H.; and Warner, William D., 4,336,271, Cl. 426-55.000.
Dornier System GmbH.: *See—*
Schmidberger, Rainer; and Franke, Hilmar, 4,336,242, Cl. 423-594.000.
Dorrell, Peter M., to Steetley Minerals Limited. Lubricant. 4,336,150, Cl. 252-56.00R.
Dow Chemical Company, The: *See—*
Asperger, Dan A., 4,336,089, Cl. 156-152.000.
Craigie, Laurence J., 4,336,344, Cl. 525-31.000.
Friedli, Hans R.; and Boriack, Clinton J., 4,336,349, Cl. 525-210.000.
Henson, Edwin R.; and Koranek, David J., 4,336,384, Cl. 546-327.000.
Messick, Virginia B., 4,336,359, Cl. 525-531.000.
Payne, Alan J.; Aylott, Michael V.; Moore, Jimmie L.; and Yokley, Edward M., 4,336,260, Cl. 424-266.000.
Renga, James M., 4,336,195, Cl. 549-462.000.
Dow Corning Corporation: *See—*
Maxson, Myron T., 4,336,364, Cl. 528-15.000.
Dowbenko, Rostyslaw: *See—*
Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslaw; and Hockswender, Thomas R., 4,335,829, Cl. 220-458.000.
Downs, Raymond L.; and Miller, Wayne J., to United States of America, Energy. Hollow microspheres of silica glass and method of manufacture. 4,336,338, Cl. 501-12.000.
Doyle, Roger F. E.: *See—*
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Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, to Ciba-Geigy Corporation. Insecticidal 2,2-dimethyl-3-(2',2'-dihalovinyl)-cyclopropane carboxylic acid 3-halophenoxy-α-vinylbenzyl esters. 4,336,266, Cl. 424-305.000.
Dragon, Robert L.: *See—*
Walls, John E.; Dragon, Robert L.; and Dunder, Thomas A., 4,336,113, Cl. 204-17.000.
Drake, Bruce S.; and Kruka, Vitold R., to Shell Oil Company. Injection system for solid friction reducing polymers. 4,335,964, Cl. 366-114.000.
Dresser Industries, Inc.: *See—*
Faverty, Delmar A.; and Shuck, Robert E., 4,335,965, Cl. 366-150.000.
Walkow, Arnold M., 4,335,602, Cl. 73-152.000.
Drews, Ulrich: *See—*
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.
DuBois, Donald W., to PPG Industries, Inc. Electrolytic apparatus utilizing a transition metal-graphite intercalation compound cathode. 4,336,123, Cl. 204-252.000.
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M. Method for welding girth joints in pipe lines. 4,336,436, Cl. 219-61.000.
Duffee, Michael T.: *See—*
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Duffy, Victor P., to Motorola Inc. High power cooler and method thereof. 4,335,781, Cl. 165-1.000.
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Walls, John E.; Dragon, Robert L.; and Dunder, Thomas A., 4,336,113, Cl. 204-17.000.
Dunham-Bush, Inc.: *See—*
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Dunn, John G.: *See—*
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Dunnavant, William R.; and Kim, Young D., to Ashland Oil, Inc. Cost reduction of acid curing foundry binders with alkylated aromatic hydrocarbon solvents. 4,336,342, Cl. 523-144.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bryan, Paul J., 4,335,652, Cl. 102-202.100.
Edwards, Donald W.; Gorondy, Emery J.; and Van Roggen, Arend, 4,336,546, Cl. 346-74.700.
Gibbs, Hugh H., 4,336,175, Cl. 524-726.000.
Ida, Edward S., 4,336,461, Cl. 250-551.000.
Krussig, Karlheinz F., 4,335,672, Cl. 118-50.000.
Lynch, Charles E.; and Wilkinson, William K., 4,336,022, Cl. 8-115.500.
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DuPont, Regis: *See—*
Koletar, Gabor I.; Frost, Jonathan B.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,336,256, Cl. 424-256.000.
Dustcontrol AB: *See—*
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Dustell Ltee: *See—*
Jolin, Marcel, 4,336,041, Cl. 55-341.00R.
Dworak, Wilhelm: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,336,006, Cl. 418-131.000.
Dybel, Frank R.; Dybel, William F.; and MacDonald, Kenneth, to International Measurement & Control Company. Waterproof strain sensing device. 4,335,614, Cl. 73-774.000.
Dybel, William F.: *See—*
Dybel, Frank R.; Dybel, William F.; and MacDonald, Kenneth, 4,335,614, Cl. 73-774.000.
Dyer, Paul N.: *See—*
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Dynie, Ernest R.: *See—*
Overy, Colin; and Dynie, Ernest R., 4,335,514, Cl. 30-382.000.
E. B. Eddy Forest Products, Ltd.: *See—*
Gladish, Herbert E., 4,335,901, Cl. 280-711.000.
E. R. Squibb & Sons, Inc.: *See—*
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E-Systems, Inc.: *See—*
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Eastern Company, The: *See—*
Swan, Jye P.; Pastva, John V., Jr.; and Dignan, Donald J., 4,335,595, Cl. 70-149.000.
Eastman Kodak Company: *See—*
Brown, Barry M.; Judd, Malcolm L.; and Schindler, Roger N., 4,336,328, Cl. 430-569.000.
Gottermeier, William F., 4,336,091, Cl. 156-244.120.
Howe, Dennis G.; Marchant, Alan B.; and Wrobel, Joseph J., 4,336,545, Cl. 346-1.100.
Smith, Frank T. J., 4,336,295, Cl. 428-195.000.
Eaton, Benny J., to Eli Lilly and Company. Herbicidal method for fallow land. 4,336,056, Cl. 71-88.000.
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Berney, Jean-Claude, 4,336,608, Cl. 368-82.000.
Eberle, William J., to General Battery Corporation. Method of extrusion-fusion welding of lead parts through an aperture in a battery case. 4,336,437, Cl. 219-78.160.
Eck, Herbert: *See—*
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Eckstrom, Peter M.: *See—*
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Economy Engine Company, The: *See—*
Beeghly, Bruce R., 4,336,463, Cl. 307-66.000.
Eda, Nobuo; Iijima, Takashi; and Toyoguchi, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Organic electrolyte cell with manganese dioxide cathode and a light metal anode. 4,336,315, Cl. 429-194.000.
Edamura, Mizuo; Takamoto, Shyunji; Furuitsu, Satoshi; Bekku, Norikatsu; and Katayama, Toshiaki, to Kawasaki Jukogyo Kabushiki Kaisha. Method for manufacturing engine cylinder block. 4,336,076, Cl. 148-3.000.
Edelstein, Arthur, to Oriel Corporation. Power driven micrometer. 4,335,516, Cl. 33-164.00R.
Edgerton, Milton T.; Granato, Roberto C.; and Lynch, Henry W., to Medical Engineering Corporation. Implant for penile construction. 4,335,714, Cl. 128-79.000.
Edington, John E.: *See—*
Brantley, William C.; and Edington, John E., 4,336,582, Cl. 363-15.000.
Edwards, Donald W.; Gorondy, Emery J.; and Van Roggen, Arend, to Du Pont de Nemours, E. I., and Company. Magnetic printing apparatus. 4,336,546, Cl. 346-74.700.
EG & G, Inc.: *See—*
Hayes, Stanley B., Jr.; and O'Connor, Robert T., 4,335,597, Cl. 73-17.00A.
Egger, Eugen: *See—*
Herdin, Gunther; Kauer, Erhard; Muckenhuber, Maximilian; and Egger, Eugen, 4,335,686, Cl. 123-90.600.
Egli, Alwin, to Platmanufaktur AB. Container with lid. 4,335,844, Cl. 229-43.000.
Eichmeier, Larry S.: *See—*
Caplis, Michael E.; and Eichmeier, Larry S., 4,335,872, Cl. 269-43.000.
Eicken, Karl; Rohr, Wolfgang; Goetz, Norbert; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicidal azolyl chloroacetanilides, compositions and method of use. 4,336,061, Cl. 71-92.000.
Eidejus, Edvardas. System of central heating. 4,335,848, Cl. 237-8.00R.
Eiden, Ronald R., to Minnesota Mining and Manufacturing Company. Anti-slip mat. 4,336,293, Cl. 428-143.000.
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Muller, Anton; Rauscher, Martin; and Witzel, Gunter, 4,335,489, Cl. 24-68.0CT.
Eissens, Alvin J.: *See—*
Staskal, Maynard L.; and Eissens, Alvin J., 4,335,855, Cl. 239-654.000.
Ekman, Timo J., to Cointest Oy. Method and apparatus for the identification of coins or equivalent. 4,335,604, Cl. 73-163.000.
Elba-Werk Maschinen-Gesellschaft mbH & Co.: *See—*
Rapp, Joachim; and Bittmann, Peter, 4,335,966, Cl. 366-2.000.
Eley, James M.: *See—*
McBurnett, James R.; and Eley, James M., 4,336,005, Cl. 418-126.000.
Eli Lilly and Company: *See—*
Eaton, Benny J., 4,336,056, Cl. 71-88.000.
Hamill, Robert L.; Hoehn, Marvin M.; and Boeck, LaVerne D., 4,336,333, Cl. 435-75.000.
Kukolja, Stjepan, 4,336,191, Cl. 260-239.00A.
Lunn, William H. W.; and Shadle, John K., 4,336,253, Cl. 424-246.000.
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,336,269, Cl. 424-330.000.
Scheifinger, Curtis C., 4,336,250, Cl. 424-177.000.
Wickiser, David I., 4,336,264, Cl. 424-272.000.
Elkin, Orville E. Jogging rope harness. 4,335,875, Cl. 272-70.000.
Ellsworth, James P.: *See—*
Bratkowski, Walter V.; Wafer, John A.; and Ellsworth, James P., 4,336,516, Cl. 335-171.000.
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Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,336,249, Cl. 424-121.000.
Enomoto, Hiroshi: *See—*
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Enomoto, Tatsuya: *See—*
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Envirotech Corporation: *See—*
Mueller, Max A.; Vandertoolen, Dirk; and Minear, Gerald, 4,336,139, Cl. 210-401.000.
Enzer, Steven E.; Sarrine, Robert J.; and Wilfong, William L., to Transidyne General Corporation. Apparatus for measuring electrochemical activity. 4,336,121, Cl. 204-195.00R.

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Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, 4,336,155, Cl. 252-301.210.
ERCO Industries Limited: *See*—
Cowley, Gerald, 4,336,228, Cl. 422-129.000.
Erdman, Timothy R., to Chevron Research Company. Fuel economy in internal combustion engines. 4,336,149, Cl. 252-56.00R.
Erickson, Porter W.: *See*—
Morris, David R.; and Erickson, Porter W., 4,336,367, Cl. 524-770.000.
Eriksen, Arthur E. Body system nutrient material. 4,336,247, Cl. 424-95.000.
ESCO Corporation: *See*—
Hahn, Frederick C.; Barber, William R., Jr.; and Hampel, David A., 4,335,532, Cl. 37-142.00R.
Etablissements Francois Salomon & Fils: *See*—
Salomon, Georges P. J., 4,335,531, Cl. 36-117.000.
Ethyl Corporation: *See*—
Hinkamp, James B., 4,336,033, Cl. 44-68.000.
Etoh, Yukihiro: *See*—
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,335,687, Cl. 123-198.00F.
Europtool Trust: *See*—
Arabian, Sandro, 4,335,833, Cl. 222-23.000.
Evans, Graham, to Ciba-Geigy AG. Optical brightening agents and photographic materials which contain these brightening agents. 4,336,326, Cl. 430-523.000.
Evans, John C., Jr.; Chai, An-Ti; and Goradia, Chandra P., to United States of America, National Aeronautics and Space Administration. Method of making a high voltage V-groove solar cell. 4,335,503, Cl. 29-572.000.
Evans, Robert F. Pressure compensator and lubricating reservoir with improved response to substantial pressure changes and adverse environment. 4,335,791, Cl. 175-228.000.
Evenstad, Donovan; and Lander, Cecil, to Wheelabrator-Frye Inc. Dust collector and filter bags therefor. 4,336,035, Cl. 55-97.000.
Ewing, Bruce A.; and Lindgren, Leonard C., to General Motors Corporation. Stress resistant hybrid radial turbine wheel. 4,335,997, Cl. 416-185.000.
Exploration Logging, Inc.: *See*—
Wisniewski, Waldemar S.; and More, Henry S., 4,336,564, Cl. 361-154.000.
Exxon Research & Engineering Co.: *See*—
Lang, Robert J.; and Pabst, Joanne K., 4,336,034, Cl. 48-202.000.
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., to Hoffmann-La Roche Inc. 1,4-Disubstituted piperazine compounds. 4,336,382, Cl. 544-374.000.
Fahrner, Donald A. Vehicle body surfacing and dolly assembly. 4,335,986, Cl. 409-116.000.
Falcone, Samuel J.; and McCoy, John J., to Atlantic Richfield Company. Process for the preparation of N-alkyl-monosubstituted carbamic acid esters. 4,336,402, Cl. 560-157.000.
Falkenbach, Gunther: *See*—
Grandel, Johannes; and Falkenbach, Gunther, 4,335,860, Cl. 241-37.500.
Falzoni, Gianluigi, to Fiat Auto S.p.A. Drive transmission unit incorporating expansible-pulley stepless speed changer. 4,335,629, Cl. 74-689.000.
Fankhauser, Peter, to Firmenich SA. 6-Ethyl-2,10,10-trimethyl-1-oxaspiro[4.5]deca-3,6-diene. 4,336,197, Cl. 549-331.000.
Farkas, Michael S.: *See*—
Kabadi, Balachandra N.; and Farkas, Michael S., 4,335,760, Cl. 141-129.000.
Farooq, Saleem: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,336,266, Cl. 424-305.000.
Faverty, Delmar A.; and Shuck, Robert E., to Dresser Industries, Inc. Fiber-resin blending technique. 4,335,965, Cl. 366-150.000.
Fay, Homer, to Union Carbide Corporation. Method and apparatus for detecting fluorescence under ambient light conditions. 4,336,459, Cl. 250-459.000.
FCI, Inc.: *See*—
Peronek, Michael H., 4,335,761, Cl. 141-371.000.
Feichtmayr, Franz; Naarmann, Herbert; Paust, Joachim; and Penzien, Klaus, to BASF Aktiengesellschaft. Preparation of electrically conductive carotenoids. 4,336,201, Cl. 260-410.90V.
Feldbljum, Nikolai B.: *See*—
Vorozhtsov, Georgy N.; Masanova, Natalia N.; Feldbljum, Nikolai B.; Alexeev, Vasily I.; Shigalevsky, Vadim A.; Solomatin, Georgy G.; Shulepova, Olga I.; Khaitun, Galina G.; and Gordeeva, Nadezhda V., 4,336,383, Cl. 546-52.000.
Feldman, Steven, to AMP Incorporated. Toolless phone plug. 4,335,930, Cl. 339-183.000.
Felix, Raymond A., to Stauffer Chemical Company. 2-Methyl-4-(chloroacetamido)methyl-4-(2-chlorophenyl)-1,3-dioxane herbicide antidote. 4,336,058, Cl. 71-88.000.
Felix, Raymond A., to Stauffer Chemical Company. Herbicidal cyclohexenone derivatives. 4,336,062, Cl. 71-98.000.
Fellows, Adrian N. Electrostatic imaging sheet. 4,336,306, Cl. 428-341.000.
Fergg, Berthold: *See*—
Findeis, Gunter; Fergg, Berthold; Osegowitsch, Viktor; Huber, Hans P.; and Meckl, Heinz, 4,335,956, Cl. 355-27.000.
Fernandez, Joe L.: *See*—
Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., 4,335,963, Cl. 366-63.000.
Ferranti Limited: *See*—
Bennett, Robert S.; and Griffiths, William E., 4,335,611, Cl. 73-517.00B.
Kane, Jeffrey, 4,336,528, Cl. 340-347.0DA.
Feuerherd, Karl-Heinz: *See*—
Gimpel, Juergen; Feuerherd, Karl-Heinz; and Schenck, Hans-Uwe, 4,336,346, Cl. 525-109.000.
Fiat Auto S.p.A.: *See*—
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Fiat Trattori S.p.A.: *See*—
Benassi, GianCarlo, 4,335,887, Cl. 277-84.000.
Fiber Industries, Inc.: *See*—
Pope, John B., 4,335,572, Cl. 57-283.000.
Fields, Robert E. Slider valves. 4,335,739, Cl. 137-269.000.
Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, to Kraftwerk Union Aktiengesellschaft. Inspection and testing device. 4,336,104, Cl. 376-249.000.
Fildan, Gerhard. Fastener for maternity-nursing brassiere. 4,335,728, Cl. 128-460.000.
Findeis, Gunter; Fergg, Berthold; Osegowitsch, Viktor; Huber, Hans P.; and Meckl, Heinz, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for adjusting associated photographic copying and developing machines. 4,335,956, Cl. 355-27.000.
Finike Italiana Marposs, S.p.A.: *See*—
Solaroli, Sergio, 4,335,818, Cl. 209-592.000.
Finke, Manfred: *See*—
Mundnich, Rainer; Finke, Manfred; Rupp, Walter; and Dehmer, Klaus, 4,336,206, Cl. 260-465.400.
Firmenich SA: *See*—
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Fischer, Wilhelm: *See*—
Holst, Arno; Mayer, Reinhart; and Fischer, Wilhelm, 4,336,299, Cl. 428-288.000.
Fischli, Albert E.: *See*—
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,336,268, Cl. 424-330.000.
Fisher, James L. Variable ratio rotary positioning mechanism and camera dolly steering mechanism embodying same. 4,335,626, Cl. 74-496.000.
Fisher, Theodore F.; and Saunders, John B., to Union Carbide Corporation. Acetylene removal in ethylene and hydrogen separation and recovery process. 4,336,045, Cl. 62-17.000.
Fisk, Harry R.: *See*—
Clark, Jeffrey J.; Fisk, Harry R.; and Wallace, Larry A., 4,336,312, Cl. 428-680.000.
Fisons Ltd.: *See*—
Brooker, Peter J.; and Goose, John, 4,336,262, Cl. 424-270.000.
Fitzmaurice, Richard W., to FMC Corporation. Harvesting shaker for crops such as tomatoes or the like. 4,335,570, Cl. 56-327.00R.
Fivizzani, Mary A.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; Wichmann, Joseph K.; and Fivizzani, Mary A., 4,336,193, Cl. 260-239.570.
Fixot, Marcel J. Apparatus for the coloring of slides. 4,335,673, Cl. 118-52.000.
Flasher, Gary L., to Bentley-Harris Manufacturing Co. Grounding structures comprising composite knitted fabrics. 4,335,589, Cl. 66-202.000.
Fleischer, Henry. Collapsible frames for baby carriers. 4,335,900, Cl. 280-649.000.
Fletcher, Richard A.: *See*—
Broadhurst, Jeffrey C.; Fletcher, Richard A.; and Jowitt, Peter F., 4,336,291, Cl. 428-101.000.
Flint & Walling, Inc.: *See*—
Robinson, Jimmie R.; and Thompson, Max E., 4,335,828, Cl. 220-334.000.
Fluid-Air Components, Inc.: *See*—
Nowak, Andrew, 4,335,993, Cl. 414-748.000.
FMC Corporation: *See*—
Billett, Ronald J., 4,335,583, Cl. 62-345.000.
Bubik, Leslie; Barclay, Stanley B.; Knaitner, Eugene L.; Williams, Frederic D. M.; and Alm, Bernard D., 4,335,772, Cl. 157-1.280.
Fitzmaurice, Richard W., 4,335,570, Cl. 56-327.00R.
Fogarasy, Attila A., to Xerox Corporation. Wire stitchers. 4,335,841, Cl. 227-90.000.
Fohl, Artur, to Repa Feinstanzwerk GmbH. Belt-lock for a safety belt. 4,335,491, Cl. 24-230.00A.
Fontani, Spartaco: *See*—
Landoni, Gianluigi; Fontani, Spartaco; and Cicchetti, Osvaldo, 4,336,182, Cl. 524-416.000.
Ford Aerospace & Communications Corp.: *See*—
Bains, William R., 4,335,657, Cl. 102-433.000.
Osborn, Douglas B.; and Pons, Robert L., 4,335,578, Cl. 60-641.800.
Ford Motor Company: *See*—
Bajorek, Benjamin T., 4,336,432, Cl. 219-10.410.
Gerlock, John L.; Braslaw, Jacob; and Stevens, William E., 4,336,406, Cl. 568-621.000.
Forker, Dieter: *See*—
Schmidt, Peter; Brunn, Otto; Forker, Dieter; and Schmidt, Willi, 4,335,492, Cl. 29-25.130.
Forschirm, Alex S., to Celanese Corporation. Non-hydrogenated thermoplastic elastomer coated fragment retentive returnable glass containers and process for the preparation thereof. 4,336,287, Cl. 428-35.000.

Foster Wheeler Energy Corporation: *See—*
Criswell, Robert L.; and Polagye, Michael C., 4,335,683, Cl. 122-4.00D.
Stewart, Robert D.; and Taylor, Thomas E., 4,335,661, Cl. 110-245.000.

Fouquet, Gerd: *See—*
Merger, Franz; and Fouquet, Gerd, 4,336,403, Cl. 560-211.000.

Fox, Steve A. Plastic extrusion apparatus and method. 4,336,213, Cl. 264-40.100.

Francis, John F.; Kirk, Bryan R.; and Terry, John C., to Gillette Company, The. Safety razor heads. 4,335,508, Cl. 30-47.000.

Frank, Clyde W.; Nord, Paul J.; and Cox, Robert D., to University of Iowa Research Foundation. Composition for determination of N-nitrosamines. 4,336,158, Cl. 252-408.000.

Franke, Albrecht: *See—*
Steiner, Gerd; and Franke, Albrecht, 4,336,192, Cl. 260-239.30T.

Franke, Hilmar: *See—*
Schmidberger, Rainer; and Franke, Hilmar, 4,336,242, Cl. 423-594.000.

Franklin Electric Co., Inc.: *See—*
Wetters, Dale D.; and Meyer, Gene L., 4,336,473, Cl. 310-88.000.

Franklin, Grover C., Jr. Method for mixing gases with liquids. 4,336,144, Cl. 210-758.000.

Frantz, Lanier: *See—*
Frantz, Virgil L.; and Frantz, Lanier, 4,336,042, Cl. 55-387.000.

Frantz, Virgil L.; and Frantz, Lanier, to Graham-White Sales Corporation. Canister-compactor assembly. 4,336,042, Cl. 55-387.000.

Frederiksen, Thomas M., to National Semiconductor Corporation. Zener regulator in butted guard band CMOS. 4,336,489, Cl. 323-231.000.

Frei, Hans-Joachim; and Wolf, Karl. Solarium. 4,335,724, Cl. 128-395.000.

Frentzel, Kurt H.; and Oskam, Herman, to Hunter Douglas International, N.V. Rotatable louver holder for louvered vertical venetian blind. 4,335,775, Cl. 160-177.000.

Frey, Max; and Krebs, Paul B., to Cornell Pump Company. Labyrinth seal with current-forming sealing passages. 4,335,886, Cl. 277-25.000.

Freyhardt, Herbert C.: *See—*
Bergmann, Hans; Bormann, Rudiger; Freyhardt, Herbert C.; and Mordike, Barry L., 4,336,065, Cl. 75-200.000.

Frick Company: *See—*
Andrew, Eduardo V.; Naunas, Robert A., Jr.; and Armstrong, Richard C., Jr., 4,336,001, Cl. 417-63.000.

Friedli, Hans R.; and Boriack, Clinton J., to Dow Chemical Company, The. Chlorinated cycloaliphatic (meth) acrylate compositions. 4,336,349, Cl. 525-210.000.

Friedrich, Hans-Helmut: *See—*
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 4,336,148, Cl. 252-49.700.

Friemann, Hans: *See—*
Alberts, Heinrich; Friemann, Hans; Sattlegger, Hans; and Moretto, Hans-Heinrich, 4,336,358, Cl. 525-439.000.

Frost, Jonathan B.: *See—*
Koletar, Gabor I.; Frost, Jonathan B.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,336,256, Cl. 424-256.000.

Fruhbeis, Horst: *See—*
Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, 4,336,155, Cl. 252-301.210.

Frye, Richard D. Hose connectors and hoses equipped with same. 4,335,753, Cl. 138-109.000.

Fryer, Rodney I.; and Gilman, Norman W., to Hoffmann-La Roche Inc. Thiazolyl benzophenone compounds. 4,336,388, Cl. 548-194.000.

Fuerst, Ernst: *See—*
Appl, Max; Wagner, Ulrich; Henrici, Hans J.; Kuessner, Klaus; Volkamer, Klaus; and Fuerst, Ernst, 4,336,233, Cl. 423-228.000.

Fuji Photo Film Co., Ltd.: *See—*
Aoki, Kozo; Sawada, Satoru; and Furutachi, Nobuo, 4,336,325, Cl. 430-505.000.
Fujita, Shinsaku; Koyama, Koichi; Inagaki, Yoshio; and Waki, Kokichi, 4,336,322, Cl. 430-242.000.
Kohayakawa, Ken; Ohba, Hisao; and Sano, Atuhiro, 4,336,093, Cl. 29-399.000.
Nagashima, Akira; and Kita, Nobuyuki, 4,336,319, Cl. 430-165.000.
Sato, Masamichi, 4,336,316, Cl. 430-5.000.
Tanaka, Mitsugu; and Tsuda, Momotoshi, 4,336,327, Cl. 430-556.000.
Yamada, Yasuyuki; Masuyama, Kenichi; and Tsuji, Nobuo, 4,336,308, Cl. 428-425.900.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,336,481, Cl. 315-241.00P.

Fujikura Cable Works, Ltd.: *See—*
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Fujita, Shinsaku; Koyama, Koichi; Inagaki, Yoshio; and Waki, Kokichi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,336,322, Cl. 430-242.000.

Fujita, Tomohiro: *See—*
Maehara, Toshifumi; and Fujita, Tomohiro, 4,335,736, Cl. 137-87.000.

Fujita, Tsuyoshi; Yokoyama, Tomio; and Ishi, Ichiro, to Hitachi, Ltd. Thick-film printed circuit board and method for producing the same. 4,336,551, Cl. 357-80.000.

Fujita, Yoshiji: *See—*
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,336,202, Cl. 549-466.000.

Fujitsu Limited: *See—*
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Fujiwara, Akiko: *See—*
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Fujiwara, Mitsuhiko; Fujiwara, Akiko; and Miyamoto, Chikara, to Hoffmann-La Roche, Inc. Process for the manufacture of hydroxylated steroids. 4,336,332, Cl. 435-58.000.

Fujiwara, Tsuyoshi; Sugimoto, Osamu; and Isoda, Chuzo, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Production of polyisocyanurate foam. 4,336,341, Cl. 521-109.000.

Fukuda, Norio: *See—*
Sata, Takeo; Takamura, Masayuki; Iijima, Kenzaburo; and Fukuda, Norio, 4,336,066, Cl. 75-211.000.

Fukuda, Osamu: *See—*
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,336,049, Cl. 65-3.120.

Fukumoto, Hiroshi; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Electrostatic image developing method. 4,336,318, Cl. 430-120.000.

Fukuta, Kenji; Onooka, Ryuzo; Aoki, Eiji; and Tsumuraya, Shigeo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Three-dimensionally latticed flexible-structure composite. 4,336,296, Cl. 428-257.000.

Funakoshi, Wataru: *See—*
Shiozaki, Masahiro; Nawata, Kiyoshi; Wada, Osamu; Tsunawaki, Kiyokazu; Kuratsuji, Takatoshi; Funakoshi, Wataru; and Suzuki, Togi, 4,336,307, Cl. 428-398.000.

Furuhashi, Toshio: *See—*
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Furuitsu, Satoshi: *See—*
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Furuoya, Itsuo: *See—*
Onishi, Isatsugu; Furuoya, Itsuo; and Minato, Ichiro, 4,336,205, Cl. 260-465.00C.

Furutachi, Nobuo: *See—*
Aoki, Kozo; Sawada, Satoru; and Furutachi, Nobuo, 4,336,325, Cl. 430-505.000.

Furuya, Takeo: *See—*
Kobayashi, Kyoji; and Furuya, Takeo, 4,336,517, Cl. 335-205.000.

Fushiki, Yasuo; Abe, Masaharu; and Uekita, Masakazu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Electrical laminate. 4,336,297, Cl. 428-284.000.

Fuzita, Yasuhiro, to Hitachi, Ltd. Coil winding machine. 4,335,856, Cl. 242-7.05B.

G. D. Searle & Co.: *See—*
Mueller, Richard A., 4,336,252, Cl. 424-198.000.
Sanvordeker, Dilip R.; Cooney, James G.; and Wester, Ronald C., 4,336,243, Cl. 424-28.000.

G. Siempelkamp GmbH & Co.: *See—*
Pesch, Jurgen, 4,336,008, Cl. 425-406.000.

Gagnon, Joseph A. L. N.: *See—*
Shaw, David N.; and Gagnon, Joseph A. L. N., 4,335,582, Cl. 62-196.00R.

Gal, Uzi, to Action Manufacturing Company. Semi-automatic firearms. 4,335,643, Cl. 89-196.000.

Galafassi, Pierre: *See—*
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Gallais, Philippe: *See—*
Babiol, Pierre; and Gallais, Philippe, 4,335,815, Cl. 206-277.000.

Gallwas, Johannes: *See—*
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Ganz, Frederick M.; Cermignani, Justine D.; and Imgram, Richard H., to Grumman Corporation. Electronically scanned aircraft antenna system having a linear array of yagi elements. 4,336,543, Cl. 343-705.000.

Garabedian, Armen. Process for making a stress-free plastic article. 4,336,221, Cl. 264-241.000.

Garganese, Richard S., to Industrial Packaging Co., Inc. Solution container. 4,335,830, Cl. 220-462.000.

Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E. Analytical fluorogenic substrates for proteolytic enzymes. 4,336,186, Cl. 260-112.50R.

Garlock Inc.: *See—*
Cather, Douglas A., Jr.; and Benjamin, Martin E., 4,335,889, Cl. 277-152.000.

Garman, Ronald H.; and Welker, Gerald H., to Caterpillar Tractor Co. Governor and decelerator control linkage. 4,335,624, Cl. 74-482.000.

Garrett Corporation, The: *See—*
Clark, Jeffrey J.; Fisk, Harry R.; and Wallace, Larry A., 4,336,312, Cl. 428-680.000.
Parker, Kenneth O., 4,335,782, Cl. 165-1.000.

Garshelis, Ivan J.: *See—*
Wood, Russell J.; and Garshelis, Ivan J., 4,335,608, Cl. 73-301.000.

Garza, Philip A.; and Carter, Barbara A. Sanitary catcher and scooper. 4,335,678, Cl. 119-1.000.

Gates Rubber Company, The: *See—*
Haines, William M., 4,336,021, Cl. 474-256.000.

Gavriljuk, Jury A.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Gavris, Genrikh B.: *See*—
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B., 4,336,498, Cl. 324-230.000.

Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck": *See*—
Reuter, Alfred, 4,335,767, Cl. 144-370.000.

Geldmacher, Barbara J. Therapeutic heat cushion. 4,335,725, Cl. 128-399.000.

Gellermann, Siegfried: *See*—
Kalfa, Horst; Schubert, Bruno; Brunmayer, Peter; and Gellermann, Siegfried, 4,335,615, Cl. 73-799.000.

Gema, S.A.: *See*—
Coll, Antonio L. P.; Meseguer, Jose D.; Bianchini, Asuncion E.; and Pitarch, Esteve S., 4,336,376, Cl. 544-030.000.

General Battery Corporation: *See*—
Eberle, William J., 4,336,437, Cl. 219-78.160.

General Binding Corporation: *See*—
Azzato, Robert N.; Staats, Henry N.; and Morrissey, Neal J., 4,335,659, Cl. 108-28.000.

General Dynamics, Pomona Division: *See*—
Palmer, John P., 4,335,933, Cl. 350-96.190.

General Electric Company: *See*—
Barrett, David M.; Love, William D.; and Donaldson, Joseph L., 4,335,928, Cl. 339-94.00C.
Bradley, Irving; and Vodicka, Vincent, 4,336,578, Cl. 362-267.000.
Crivello, James V., 4,336,363, Cl. 526-333.000.
Hanson, James M., 4,336,577, Cl. 362-267.000.
Miller, Matthew S., 4,336,434, Cl. 219-10.55F.
Rosenberry, George M., Jr., 4,335,972, Cl. 403-11.000.
Tantraporn, Wirojana, 4,336,099, Cl. 156-614.000.
Wright, Jack D., 4,335,573, Cl. 60-261.000.
Wu, Peter T.; and Grabkowski, Stephen E., 4,335,600, Cl. 73-117.300.

General Electric Company Limited, The: *See*—
Wickenden, Dennis K.; and Vincent, Vera M., 4,335,501, Cl. 29-569.00L.

General Instrument Corporation: *See*—
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,336,580, Cl. 362-347.000.

General Motors Corporation: *See*—
Ewing, Bruce A.; and Lindgren, Leonard C., 4,335,997, Cl. 416-185.000.
Kazewych, Bohdan, 4,335,541, Cl. 49-360.000.
Kotowski, Thomas W., 4,336,562, Cl. 361-88.000.
Shipp, Robert A.; and Hung, Chuan-Yung, 4,336,448, Cl. 235-92.0MS.

George Koch Sons, Inc.: *See*—
Williams, Stanley E., 4,335,758, Cl. 140-88.000.

George, Robert W.; Miller, Casper W.; and Rapey, Kenneth, to National Can Corporation. Apparatus for applying liners to closures. 4,336,011, Cl. 425-129.00R.

Georgetown University: *See*—
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., 4,336,493, Cl. 324-61.00R.

Georgia Equipment Manufacturing Inc.: *See*—
Bratschitsch, John, 4,335,982, Cl. 406-48.000.

Gerard, Francois; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Electrodes with current outlets. 4,336,124, Cl. 204-284.000.

Gerhardy, Reinhard, to Andreas Stihl. Carburetor for internal combustion engine. 4,336,208, Cl. 261-71.000.

Gerlock, John L.; Braslaw, Jacob; and Stevens, William E., to Ford Motor Company. Polyol extraction by high boiling alkanes. 4,336,406, Cl. 568-621.000.

Gesellschaft fur Schneidtechnik mit beschrankter Haftung: *See*—
Schocher, Werner, 4,335,638, Cl. 83-801.000.

Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, to Montecatini Edison S.p.A. Process for the stereoregular polymerization of alpha-olefins. 4,336,360, Cl. 526-114.000.

Gibbs, Hugh H., to Du Pont de Nemours, E. I., and Company. Polyimide precursor solutions. 4,336,175, Cl. 524-726.000.

Gierenz, Gerhard: *See*—
Kohlstadt, Hans-Peter; Ozelli, Riza N.; and Gierenz, Gerhard, 4,336,171, Cl. 524-510.000.

Giglia, Robert D.; and Huang, Sun Y., to American Cyanamid Company. Electrochromic cells with improved electrolyte system. 4,335,938, Cl. 350-357.000.

Giguere, Marcel L. System for processing soils contaminated by crude oils or other refined petroleum products. 4,336,136, Cl. 210-178.000.

Gillery, F. Howard, to PPG Industries, Inc. Method of and apparatus for control of reactive sputtering deposition. 4,336,119, Cl. 204-192.00P.

Gillespie, Robert A., to Brent Chemicals Corporation. Multiple washer laundry system with common function control. 4,335,591, Cl. 68-12.00R.

Gillette Company, The: *See*—
Francis, John F.; Kirk, Bryan R.; and Terry, John C., 4,335,508, Cl. 30-47.000.

Gilman, Lester, to Kidde Consumer Durables Corp. Breakaway plaster frame. 4,336,575, Cl. 362-147.000.

Gilman, Norman W.: *See*—
Fryer, Rodney I.; and Gilman, Norman W., 4,336,388, Cl. 548-194.000.

Gimpel, Juergen; Feuerherd, Karl-Heinz; and Schenck, Hans-Uwe, to BASF Aktiengesellschaft. Copolymers containing blocked isocyanate groups, and their use in anodic electrocoating. 4,336,346, Cl. 525-109.000.

Giordano, Claudio; and Belli, Aldo, to Blasinachim S.p.A. Process for the preparation of 4-[2-(dimethylamino)-ethoxy]2-methyl-5-(1-methylethyl)-phenol esters and their salts. 4,336,396, Cl. 560-20.000.

Glacier Metal Company, Limited, The: *See*—
Stopp, Peter G., 4,335,925, Cl. 308-160.000.

Gladish, Herbert E., to E. B. Eddy Forest Products, Ltd. Suspension override system. 4,335,901, Cl. 280-711.000.

Glass, Seymour, executor: *See*—
Dierks, Raymond W., deceased; Noviello, Nicholas, Jr., executor; and Glass, Seymour, executor, 4,335,845, Cl. 229-69.000.

Glassman, Jacob A. Catamenial tampon with hollow core. 4,335,720, Cl. 128-270.000.

Glavitsch, Hans; and Guth, Gerhard, to BBC Brown, Boveri & Company Limited. Transformer for the controllable shifting of the phase angle of output voltages in relation to the phase angles of input voltages. 4,336,488, Cl. 323-215.000.

Glockle, Werner A.: *See*—
Schwaab, Konstantin H.; Petzold, W. Andreas; and Glockle, Werner A., 4,335,666, Cl. 112-130.000.

Glockler, Otto: *See*—
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.

Godai, Tomokazu; Sugiyama, Tohru; and Nishikawa, Yutaka, to Kobe Steel, Ltd. Welding process. 4,336,441, Cl. 219-137.0WM.

Goertler, Horst; Munz, Joachim; Prohaska, Hans; and Rachner, Horst, to ITT Industries, Inc. Rear window wiper motor control. 4,336,482, Cl. 318-443.000.

Goes, Michael J.; and Schmidlin, Albertus E. Fluidic recoil buffer for small arms. 4,335,644, Cl. 89-198.000.

Goetz, Norbert: *See*—
Eicken, Karl; Rohr, Wolfgang; Goetz, Norbert; and Wuerzer, Bruno, 4,336,061, Cl. 71-92.000.

Goffman, Martin: *See*—
Kudryk, Val; and Goffman, Martin, 4,336,237, Cl. 423-531.000.

Goldis, Alexander; Sellen, Kenneth R.; and Banka, Eugene F., to Burroughs Corporation. Continuous deaeration system for a fluid pump system. 4,336,037, Cl. 55-171.000.

Gomibuchi, Reizo: *See*—
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,336,028, Cl. 8-624.000.

Gonda, Gerald J.; and Vancza, John, Jr., to Tri-Tronics, Inc. Animal training apparatus. 4,335,682, Cl. 119-29.000.

Gonmori, Makoto: *See*—
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,335,957, Cl. 355-30.000.

Goodfellow, Robert D., to Kennametal Inc. Rotary cone cutter. 4,335,794, Cl. 175-337.000.

Goodman, Donald. Lighted coaster for drinking glasses. 4,336,574, Cl. 362-101.000.

Goodsell, John P., to Harvey Hubbell Incorporated. Fire-rated feedthrough fitting for transferring insulated wires through a concrete floor. 4,336,416, Cl. 174-48.000.

Goodwin, William V.; and Williams, James S., deceased (by Williams, Elizabeth J., executrix), to RCA Corporation. Radar system. 4,336,540, Cl. 343-16.00R.

Goodyear Aerospace Corporation: *See*—
Beck, Arnold A., 4,336,592, Cl. 364-426.000.

Goodyear Tire & Rubber Company, The: *See*—
Reuter, Rene F., 4,335,771, Cl. 152-361.0FP.

Goose, John: *See*—
Brooker, Peter J.; and Goose, John, 4,336,262, Cl. 424-270.000.

Goradia, Chandra P.: *See*—
Evans, John C., Jr.; Chai, An-Ti; and Goradia, Chandra P., 4,335,503, Cl. 29-572.000.

Gordeeva, Nadezhda V.: *See*—
Vorozhtsov, Georgy N.; Masanova, Natalia N.; Feldbljum, Nikolai B.; Alexeev, Vasily I.; Shigalevsky, Vadim A.; Solomatin, Georgy G.; Shulepova, Olga I.; Khaitun, Galina G.; and Gordeeva, Nadezhda V., 4,336,383, Cl. 546-52.000.

Gorden, Dale I.; and Petersen, Sigrud R., to Westinghouse Electric Corp. Dynamoelectric machines brushless supplemental excitation system. 4,336,486, Cl. 322-63.000.

Gorondy, Emery J.: *See*—
Edwards, Donald W.; Gorondy, Emery J.; and Van Roggen, Arend, 4,336,546, Cl. 346-74.700.

Goto, Motoomi, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier with input stage differential amplifying circuit. 4,336,502, Cl. 330-253.000.

Gottermeier, William F., to Eastman Kodak Company. Method of making capillary bridge in apparatus for determining ionic activity. 4,336,091, Cl. 156-244.120.

Gould, Gerald, to Gould, Roger E., a part interest. Building block system. 4,335,553, Cl. 52-375.000.

Gould, Roger E.: *See*—
Gould, Gerald, 4,335,553, Cl. 52-375.000.

Grabb, Frederick G., to Bendix Corporation, The. Movable end plate for a vacuum pump. 4,336,004, Cl. 417-283.000.
Grabkowski, Stephen E.: *See*—
Wu, Peter T.; and Grabkowski, Stephen E., 4,335,600, Cl. 73-117.300.
Graboplast Gyori Pamutszovo-es Muborgyar: *See*—
Lorant, Ivan; Csernyanszky, Imre; Murlasits, Gyula; Rusznyak, Rezso; and Szabo nee Paulyuk, Paula, 4,336,300, Cl. 428-316.600.
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, to Robert Bosch GmbH. Gear positive displacement machine with gaps between bearing members and housing. 4,336,006, Cl. 418-131.000.
Graham, Kenneth G. Vehicle seat-occupancy recorder. 4,336,522, Cl. 340-52.00R.
Graham-White Sales Corporation: *See*—
Frantz, Virgil L.; and Frantz, Lanier, 4,336,042, Cl. 55-387.000.
Gramera, Robert E. Magnetically-automated uncoupling system for model railroads. 4,335,820, Cl. 213-75.0TC.
Granato, Roberto C.: *See*—
Edgerton, Milton T.; Granato, Roberto C.; and Lynch, Henry W., 4,335,714, Cl. 128-79.000.
Grandel, Johannes; and Falkenbach, Gunther, to Braun AG. Electric household blender with motor enabled by lid locking. 4,335,860, Cl. 241-37.500.
Grandmaison, John P.: *See*—
Vernon, John H.; Grandmaison, John P.; and Huettner, Robert E., 4,336,588, Cl. 364-200.000.
Grass, Gunter. Lift device. 4,335,805, Cl. 187-12.000.
Graunke, Donald R., to Boeing Company, The. Method for determining the strength of a metal processing solution. 4,336,111, Cl. 204-1.00T.
Gray, Joseph E.: *See*—
Alaimo, Robert J.; and Gray, Joseph E., 4,336,199, Cl. 549-496.000.
Greenberg, Sheldon, to Shelcore, Inc. Inflatable overhead crib gym toy. 4,335,538, Cl. 46-88.000.
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., to Hanover Research Corporation. Process and apparatus for recovering clean water and solids from aqueous solids. 4,336,101, Cl. 159-16.00S.
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., to Georgetown University. Identification of materials using their complex dielectric response. 4,336,493, Cl. 324-61.00R.
Greiner, Yvan, to Portescap. Device for measuring the operation of a timepiece movement. 4,335,596, Cl. 73-6.000.
Gresch, Heinz: *See*—
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,335,708, Cl. 126-442.000.
Greskovich, Eugene J.: *See*—
Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., 4,336,238, Cl. 423-584.000.
Griesemer, Douglas E., Sr., to RCA Corporation. Method for vaporizing getter material in a succession of cathode-ray tubes. 4,335,926, Cl. 316-3.000.
Griffin, Gladys B. Collector assembly and specimen tube therefor. 4,335,730, Cl. 128-760.000.
Griffiths, William E.: *See*—
Bennett, Robert S.; and Griffiths, William E., 4,335,611, Cl. 73-517.00B.
Groginsky, Charles M.: *See*—
Orlowski, Ronald C.; Groginsky, Charles M.; and Seyler, Jay K., 4,336,187, Cl. 260-112.50T.
Grogler, Gerhard: *See*—
Recker, Klaus; and Grogler, Gerhard, 4,336,180, Cl. 524-847.000.
Grumman Corporation: *See*—
Ganz, Frederick M.; Cermignani, Justine D.; and Ingram, Richard H., 4,336,543, Cl. 343-705.000.
Gsell, Laurenz: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,336,266, Cl. 424-305.000.
GTE Laboratories Incorporated: *See*—
Peters, Thomas E.; and McColl, James R., 4,336,313, Cl. 428-691.000.
GTE Products Corporation: *See*—
Brower, Boyd G.; and Houseknecht, Gary L., 4,336,570, Cl. 362-4.000.
Gulbins, Erich: *See*—
Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, 4,336,116, Cl. 204-159.110.
Gulf & Western Manufacturing Company: *See*—
Lankston, Robert J., 4,335,757, Cl. 138-92.000.
Gunther, Dieter: *See*—
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.
Gunzelmann, Edward J.; Thettu, Raghulinga R.; and Wood, Larry M., to Xerox Corporation. Frame assembly with upper and lower frame members for automatic reproducing apparatus. 4,335,950, Cl. 355-3.00R.
Gunzner, Fred G., to Acu-Edge, Inc. High-speed manufacturing system for saber sawblades and the like. 4,335,630, Cl. 76-25.00R.
Gurth, Max I. Method and apparatus for pumping large solid articles. 4,335,994, Cl. 415-90.000.
Gust, Irish, Jeffers & Hoffman: *See*—
Bice, Howard W.; and Williams, Don W., 4,336,444, Cl. 219-505.000.
Gutgsell, David R. Truck bed cap structure. 4,335,916, Cl. 296-100.000.
Guth, Gerhard: *See*—
Glavitsch, Hans; and Guth, Gerhard, 4,336,488, Cl. 323-215.000.
Guthrie, Robert W.: *See*—
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,336,382, Cl. 544-374.000.
Gutris, Giorgio. Rotary electric machine of the in-out type provided with integral stator supporting means, component for said machine and method for assembling the same. 4,336,470, Cl. 310-42.000.
Guzman-Bofill, Carlos; and Dominguez-Ahedo, Carlos, to Hylsa, S.A. Method and apparatus for the gaseous reduction of iron ore to sponge iron. 4,336,063, Cl. 75-35.000.
Gylden, Nils O.; Karlen, Nial T.; Andersson, Jarl B. E.; and Andersson, Anders G. T. Process and device for preparing cast explosive bodies. 4,336,209, Cl. 264-3.00R.
Haberl, Johann, to Dustcontrol AB. Dust separator. 4,336,040, Cl. 55-304.000.
Hackney, John. Sail batten improvements. 4,335,669, Cl. 114-103.000.
Hadley, Michael S.; and King, Francis D., to Beecham Group Limited. Certain aza-bicyclo-benzamide derivatives and pharmaceutical compositions containing same. 4,336,259, Cl. 424-265.000.
Hafner, Dieter, to Diehl GmbH & Co. Apparatus for the manual production of digital pulses. 4,336,446, Cl. 235-92.0DE.
Haggard, Richard A.: *See*—
Lewis, Sheldon N.; and Haggard, Richard A., 4,336,345, Cl. 525-107.000.
Hagihara, Kazuyo: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,336,331, Cl. 435-24.000.
Hague, Robert Z.; Marsicano, Matthew F.; and Hantman, Edwin F., to Textron, Inc. Machine tool. 4,335,498, Cl. 29-568.000.
Hahn, Frederick C.; Barber, William R., Jr.; and Hampel, David A., to ESCO Corporation. Excavating tooth. 4,335,532, Cl. 37-142.00R.
Haines, William M., to Gates Rubber Company, The. Emergency belting and kit. 4,336,021, Cl. 474-256.000.
Hall, James O.: *See*—
Reaume, Leonard V.; and Hall, James O., 4,335,762, Cl. 144-194.000.
Halliburton Company: *See*—
Briscoe, James E., 4,336,145, Cl. 252-8.55R.
Murphey, Joseph R.; and Young, Bill M., 4,335,788, Cl. 166-278.000.
Halpern, Yuval, to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polyphenylene ether compositions. 4,336,184, Cl. 523-179.000.
Halstead, William M. Cable tie installing and releasing tool. 4,335,477, Cl. 7-158.000.
Hamala, Sirpa L.; Koivunen, Seppo T.; Kontturi, Anna-Kaisa; and Sarkkinen, Veli J., to Oy Tampella AB. Process for recovering lignosulfonates from spent sulfite liquor. 4,336,189, Cl. 260-124.00R.
Hambly, Warren E.: *See*—
Campbell, Stephen J.; Hambly, Warren E.; and Harrison, George C., 4,336,583, Cl. 363-21.000.
Hamby, Michael V.: *See*—
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,336,580, Cl. 362-347.000.
Hamer, George D.; and Russell, Robert F., to Scott Bader Company Limited. Unsaturated polyester resins. 4,336,169, Cl. 523-511.000.
Hamill, Robert L.; Hoehn, Marvin M.; and Boeck, LaVerne D., to Eli Lilly and Company. Process for preparing tunicamycin. 4,336,333, Cl. 435-75.000.
Hamlet, Buck C.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,335,991, Cl. 414-519.000.
Hampel, David A.: *See*—
Hahn, Frederick C.; Barber, William R., Jr.; and Hampel, David A., 4,335,532, Cl. 37-142.00R.
Hanas, Bertil; and Stenkvist, Sven-Einar, to ASEA Aktibolag. Molten metal heating, stirring and casting apparatus. 4,336,411, Cl. 373-85.000.
Hand, George E., to Kerr Concrete Pipe Company. Apparatus for forming concrete articles of uniform density. 4,336,013, Cl. 425-145.000.
Handte, Reinhard: *See*—
Bieringer, Hermann; and Handte, Reinhard, 4,336,057, Cl. 71-88.000.
Haneishi, Tatsuo: *See*—
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,336,249, Cl. 424-121.000.
Hanford, William E., Jr.; and Hanford, William E., Sr. Water decontamination apparatus. 4,336,225, Cl. 422-106.000.
Hanford, William E., Sr.: *See*—
Hanford, William E., Jr.; and Hanford, William E., Sr., 4,336,225, Cl. 422-106.000.
Hannett, William J.; Brendel, Thomas E.; and Wilson, David S., to Carrier Corporation. Refrigeration unit with water cooled condenser. 4,335,580, Cl. 62-79.000.
Hanover Research Corporation: *See*—
Greenfield, Charles; Casparian, Robert E.; and Bonanno, Anthony J., 4,336,101, Cl. 159-16.00S.
Hansen, Kai: *See*—
DeVries, Adrian J.; and Hansen, Kai, 4,336,515, Cl. 333-195.000.

Hanson, James M., to General Electric Company. Mounting pads for plastic par lamp. 4,336,577, Cl. 362-267.000.

Hantman, Edwin F.: *See*—
Hague, Robert Z.; Marsicano, Matthew F.; and Hantman, Edwin F., 4,335,498, Cl. 29-568.000.

Hapke, Friedrich, to U.S. Philips Corporation. Integrated circuit arrangement in MOS-technology with field-effect transistors. 4,336,495, Cl. 324-158.00T.

Hardee, Kim C.: *See*—
Sud, Rahul; and Hardee, Kim C., 4,336,466, Cl. 307-297.000.

Harpell, Gary A.: *See*—
Aharoni, Shaul M.; Prevorsek, Dusan C.; Schmitt, George J.; Harpell, Gary A.; and Lee, Lester T. C., 4,336,356, Cl. 525-388.000.

Harrison, George C.: *See*—
Campbell, Stephen J.; Hambly, Warren E.; and Harrison, George C., 4,336,583, Cl. 363-21.000.

Harvey Hubbell Incorporated: *See*—
Goodsell, John P., 4,336,416, Cl. 174-48.000.

Harvey, Walter L.: *See*—
Leach, J. Michael; and Harvey, Walter L., 4,336,077, Cl. 148-3.000.

Harvill, William A., to Cornelius Company, The; and Coca-Cola Company, The. Beverage dispenser having an improved level control for a liquid heat exchange medium. 4,335,836, Cl. 222-108.000.

Hasegawa, Toshifumi: *See*—
Munekata, Kenichi; Ohkoshi, Fumihiko; Kamiya, Yoji; and Hasegawa, Toshifumi, 4,335,500, Cl. 29-568.000.

Hasegawa, Yoshio: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,336,215, Cl. 264-63.000.

Hashimoto, Toshio: *See*—
Yasugi, Masahiko; Takahashi, Shigeru; and Hashimoto, Toshio, 4,335,612, Cl. 73-593.000.

Hastings, Donald R., to Nordson Corporation. Electrostatic spray gun. 4,335,851, Cl. 239-3.000.

Hata, Hideo: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,336,212, Cl. 264-22.000.
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,336,350, Cl. 525-211.000.

Hattori, Yoshiyuki: *See*—
Takeda, Kenji; Hattori, Yoshiyuki; and Kasagi, Takao, 4,336,007, Cl. 418-183.000.

Hauler, Peter; and Hinke, Walter, to Robert Bosch GmbH. Pulse generator, particularly to provide ignition pulses for internal combustion engines. 4,335,700, Cl. 123-617.000.

Hautemont, Jean-Claude, to Pak Pro International N.V. Device for severing and transferring a label. 4,335,635, Cl. 83-160.000.

Hayashi, Eiji: *See*—
Shindo, Shotaro; and Hayashi, Eiji, 4,336,494, Cl. 324-62.000.

Hayes, Stanley B., Jr.; and O'Connor, Robert T., to EG & G, Inc. Dew point hygrometer with two cooled reflective surfaces. 4,335,597, Cl. 73-17.00A.

Heard, Maurice C., to Marconi Company Limited, The. Wind speed measurement. 4,336,606, Cl. 367-117.000.

Hedges, Walter P.; and Sullivan, C. Gardner, II, to Cyborex Laboratories, Inc. Electrical load restoration system. 4,336,462, Cl. 307-35.000.

Heiba, El-Ahmadi I.: *See*—
Chen, Tsong M.; Heiba, El-Ahmadi I.; and John, William W., 4,336,052, Cl. 71-28.000.

Heidingher, Alexandru; and Sinko, Ioan, to Centrala Minereurilor si Metalurgiei, Neferoase Baia Mare. Process for preparing abrasion and corrosion resistant material. 4,336,178, Cl. 523-206.000.

Heikel, Aslak R.: *See*—
Pattiniemi, Veikko; Koivisto, Eero; Kokki, Heikki; and Heikel, Aslak R., 4,335,759, Cl. 141-5.000.

Heil, Gunter: *See*—
Jackel, Klaus-Peter; Heil, Gunter; and Spoor, Herbert, 4,336,309, Cl. 428-447.000.

Heinrich, George F.: *See*—
Perry, Russell C., 4,336,449, Cl. 235-429.000.

Hellige GmbH: *See*—
Hopmeier, Joachim; Leist, Helmut; and Ullrich, Georg J., 4,336,031, Cl. 23-232.00R.

Hendrickson, Alvin E. Navigational aid device. 4,336,539, Cl. 343-6.0TV.

Henkel Corporation: *See*—
Lindner, Robert A., 4,336,176, Cl. 524-310.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel GaA): *See*—
Kohlstadt, Hans-Peter; Ozelli, Riza N.; and Gierenz, Gerhard, 4,336,171, Cl. 524-510.000.

Henneberger, Roy L.: *See*—
Cramer, Robert L.; and Henneberger, Roy L., 4,335,735, Cl. 137-81.100.

Henrici, Hans J.: *See*—
Appl, Max; Wagner, Ulrich; Henrici, Hans J.; Kuessner, Klaus; Volkamer, Klaus; and Fuerst, Ernst, 4,336,233, Cl. 423-228.000.

Henson, Edwin R.; and Koranek, David J., to Dow Chemical Company, The. Preparation of 4-amino-3,5,6-trichloropicolinic acid. 4,336,384, Cl. 546-327.000.

Herbertz, Toni: *See*—
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, 4,336,214, Cl. 264-49.000.

Hercules Incorporated: *See*—
Hulshof, Lumbertus A., 4,336,401, Cl. 560-106.000.
Majewicz, Thomas G.; and Podlas, Thomas J., 4,336,146, Cl. 252-8.55R.

Herdin, Gunther; Kauer, Erhard; Muckenhuber, Maximilian; and Egger, Eugen, to Steyr-Daimler-Puch Aktiengesellschaft. Valve control and pump-actuating means of internal combustion engine with fuel injection. 4,335,686, Cl. 123-90.600.

Herrmann, Henry O., Jr., to AMP Incorporated. Elastomeric potting shell. 4,335,932, Cl. 339-218.00M.

Heshmat, Hooshang, to Mechanical Technology Incorporated. Plural fluid magnetic/centrifugal seal. 4,335,885, Cl. 277-13.000.

Hesse, Peter; Schinle, Friedbert; and Loscher, Helmut, to W. C. Heraeus GmbH. Method and apparatus for treatment of biological substances, particularly for cultivation of biological cells and tissues, or of microorganisms. 4,336,329, Cl. 435-3.000.

Hetherington, Richard J.; Melvin, George E.; Milkovich, Stephen A.; and Urfer, Ernest N., to International Business Machines Corp. Method of fabricating an improved multi-layer ceramic substrate. 4,336,088, Cl. 156-89.000.

Hewes, Charles R., to Texas Instruments Incorporated. Charge coupled device filters and modems incorporating such filters. 4,336,613, Cl. 375-9.000.

Hewlett-Packard Company: *See*—
Donald, David K.; Lee, Michael J.; and Vaught, John L., 4,336,544, Cl. 346-1.100.
Regan, Richard J., 4,336,513, Cl. 333-173.000.

Hickling, David J., to Plessey Handel und Investments AG. Cover assemblies for electrical apparatus. 4,336,417, Cl. 174-52.00R.

Hijikata, Toshio; and Kawasaki, Kazuhiro, to Neturen Company, Ltd. Process of preparing steel coil spring. 4,336,081, Cl. 148-12.00B.

Hill, Eugene; Jansons, Arnolds; and Truchard, James J., to United States of America, Navy. Beamformer having random access memory delay. 4,336,607, Cl. 367-123.000.

Hillman, Leon. Ultraviolet method for disinfection and sterilization of fluids. 4,336,223, Cl. 422-24.000.

Hilton, R. John, to Boeing Company, The. Method of making sandwich panel. 4,336,090, Cl. 156-154.000.

Hinkamp, James B., to Ethyl Corporation. Fuel compositions containing iron pentacarbonyl. 4,336,033, Cl. 44-68.000.

Hinke, Walter: *See*—
Hauler, Peter; and Hinke, Walter, 4,335,700, Cl. 123-617.000.

Hirano, Masachika: *See*—
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,336,194, Cl. 548-562.000.

Hirato, Mizuho: *See*—
Koyama, Shuntaro; Miyamoto, Tomohiko; and Hirato, Mizuho, 4,336,227, Cl. 422-111.000.

Hirokawa, Yoichi: *See*—
Masuzawa, Isao; Yamamoto, Kanshi; and Hirokawa, Yoichi, 4,336,594, Cl. 364-457.000.

Hirota, Taisuke: *See*—
Kodama, Churyo; Hirota, Taisuke; Ohno, Hiroshi; and Urataki, Etsuo, 4,336,479, Cl. 313-487.000.

Hirth, Emil, to Sybron Corporation. Headrest for a dental chair. 4,335,920, Cl. 297-408.000.

Hiscock, Roger F. Wheel for toy vehicle. 4,335,899, Cl. 280-259.000.

Hitachi, Ltd.: *See*—
Abe, Osame; Suda, Seiji; and Furuhashi, Toshio, 4,335,689, Cl. 123-339.000.
Fujita, Tsuyoshi; Yokoyama, Tomio; and Ishi, Ichiro, 4,336,551, Cl. 357-80.000.
Fuzita, Yasuhiro, 4,335,856, Cl. 242-7.05B.
Kanamaru, Hisanobu; Tohkairin, Akira; Tatsumi, Hideo; and Okabe, Moisei, 4,335,496, Cl. 29-520.000.
Kodama, Churyo; Hirota, Taisuke; Ohno, Hiroshi; and Urataki, Etsuo, 4,336,479, Cl. 313-487.000.
Kurosawa, Yukio; Kawakubo, Yukio; and Abe, Nobuo, 4,336,430, Cl. 200-144.00B.
Morinaga, Shigeki; Miyashita, Kunio; Takahashi, Tadashi; Maeda, Takeo; and Yamashita, Seizi, 4,336,475, Cl. 310-198.000.
Okubo, Tsuneo; Kato, Yasuo; and Matsuoka, Genya, 4,336,597, Cl. 364-560.000.
Seki, Kunio; and Katoh, Norihisa, 4,336,504, Cl. 330-274.000.

Hitachi Ome Electronic Co., Ltd.: *See*—
Seki, Kunio; and Katoh, Norihisa, 4,336,504, Cl. 330-274.000.

Hoag, Richard L. Laminated junction box module and laminated plug-in accessory modules selectively usable therewith. 4,336,418, Cl. 174-53.000.

Hoch, Samuel; and Ceprini, Mario Q., to Tenneco Chemicals, Inc. Stable liquid antimony stabilizer compositions and vinyl halide resins containing same. 4,336,168, Cl. 524-300.000.

Hockswender, Thomas R.: *See*—
Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslaw; and Hockswender, Thomas R., 4,335,829, Cl. 220-458.000.

Hodges, James L.; and Cerkanowicz, Anthony E. Apparatus and method for controlling heat transfer between a fluidized bed and tubes immersed therein. 4,335,785, Cl. 165-39.000.

Hodges, Robert J.: *See*—
Jackson, Thomas M.; Hodges, Robert J.; and Amphlett, Stephen L., 4,336,429, Cl. 200-67.0DB.

Hoechst Aktiengesellschaft: *See*—
Becker, Reinhold, 4,335,488, Cl. 17-33.000.
Bieringer, Hermann; and Handte, Reinhard, 4,336,057, Cl. 71-88.000.
Holst, Arno; Mayer, Reinhart; and Fischer, Wilhelm, 4,336,299, Cl. 428-288.000.

Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, 4,336,155, Cl. 252-301.210.
Mundnich, Rainer; Finke, Manfred; Rupp, Walter; and Dehmer, Klaus, 4,336,206, Cl. 260-465.400.
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,336,025, Cl. 8-527.000.
Schwaiger, Gunther; and Hoyer, Ernst, 4,336,190, Cl. 260-149.000.

Hoehn, Marvin M.: *See—*
Hamill, Robert L.; Hoehn, Marvin M.; and Boeck, LaVerne D., 4,336,333, Cl. 435-75.000.

Hoesch Werke Aktiengesellschaft: *See—*
Diener, Arnulf; Laucht, Walter; and Icking, Eugen, 4,335,870, Cl. 266-193.000.

Hoff, Stephen J., to Hoffco, Inc. Lawn trimmer construction. 4,335,585, Cl. 464-52.000.

Hoffco, Inc.: *See—*
Hoff, Stephen J., 4,335,585, Cl. 464-52.000.

Hoffmann, Harald: *See—*
Schultheiss, Wolfram; and Hoffmann, Harald, 4,336,038, Cl. 55-274.000.

Hoffmann-La Roche Inc.: *See—*
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,336,268, Cl. 424-330.000.
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,336,382, Cl. 544-374.000.
Fryer, Rodney I.; and Gilman, Norman W., 4,336,388, Cl. 548-194.000.
Fujiwara, Mitsuhiko; Fujiwara, Akiko; and Miyamoto, Chikara, 4,336,332, Cl. 435-58.000.
Muller, Jean-Claude; and Ramuz, Henri, 4,336,380, Cl. 544-198.000.

Hoffmann, Wolfgang, to B & H Manufacturing Company, Inc. Machine for labeling bodies and shoulders of containers. 4,336,095, Cl. 156-361.000.

Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Plunger operated magnetic contact switch assembly. 4,336,518, Cl. 335-205.000.

Holland, Eddie L., to U.S. Industries, Inc. Manure shield for multi-tier poultry cage constructions. 4,335,681, Cl. 119-17.000.

Holland, William P.; and DeCou, Donld F., Jr., to Machlett Laboratories, Incorporated, The. Grooved X-ray generator. 4,336,476, Cl. 313-60.000.

Holst, Arno; Mayer, Reinhart; and Fischer, Wilhelm, to Hoechst Aktiengesellschaft. Use of modified cellulose hydrate fibers in the manufacture of bonded non-woven fabrics and products prepared in this manner. 4,336,299, Cl. 428-288.000.

Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, to Holter, Heinz. Solar collector. 4,335,708, Cl. 126-442.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Miura, Nobuo, 4,335,692, Cl. 123-418.000.
Totsune, Atsushi; Itoh, Yasuhito; and Yamabe, Hitoshi, 4,335,699, Cl. 123-568.000.

Honeywell Inc.: *See—*
Cummings, John P.; Makos, Janice D.; and Pitkanen, David E., 4,336,320, Cl. 430-198.000.

Honeywell Information Systems Inc.: *See—*
Bernhardt, Donn E.; and McCulley, Lowell D., Jr., 4,336,611, Cl. 371-38.000.
Vernon, John H.; Grandmaison, John P.; and Huettner, Robert E., 4,336,588, Cl. 364-200.000.

Hooker Chemicals & Plastics Corp.: *See—*
Mayer, Linda J.; and Barbieri, Stephen C., 4,336,114, Cl. 204-52.00R.

Hoole, Tyson C. A., to Boeing Company, The. Dynamic headroom test generator. 4,336,499, Cl. 328-188.000.

Hopf, Dieter. String instrument. 4,335,641, Cl. 84-297.00R.

Hopfe, Harold H. Wave energy desalinization. 4,335,576, Cl. 60-398.000.

Hopmeier, Joachim; Leist, Helmut; and Ullrich, Georg J., to Hellige GmbH. Method for the calibration of an oxygen sensing unit and calibration agent therefor. 4,336,031, Cl. 23-232.00R.

Horbelt, Michael: *See—*
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.

Horiba Limited: *See—*
Imaki, Takao; Mikasa, Hajime; and Sakai, Niro, 4,336,453, Cl. 250-344.000.

Horiike, Tetsuro; Okimoto, Tomoyuki; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Co., Ltd. Method of treatment of an aqueous dispension of microcapsules. 4,336,170, Cl. 521-55.000.

Hosaka, Akihiko: *See—*
Okuyama, Kiyotaka; Hosaka, Akihiko; and Isobe, Yukihiro, 4,336,310, Cl. 428-447.000.

Hosaka, Hirokazu; Tanimoto, Kenji; Tanaka, Kunihiko; Morita, Toshiharu; Shiota, Katsuyuki; Ueda, Yuji; and Kai, Seiichi, to Sumitomo Chemical Company, Limited. Method for the recovery of acetone. 4,336,109, Cl. 203-34.000.

Hoshino, Kunihisa: *See—*
Utagawa, Ken; Ogasawara, Akira; Shirasu, Hiroshi; and Hoshino, Kunihisa, 4,336,450, Cl. 250-201.000.

Hosokawa, Hiroyuki; and Maeda, Shiro, to Nippondenso Co., Ltd. Temperature-detection type change-over valve. 4,335,690, Cl. 123-407.000.

Hosoya, Yoshihiro: *See—*
Nakaoka, Kazuhide; Nishimoto, Akihiko; and Hosoya, Yoshihiro, 4,336,080, Cl. 148-12.00C.

Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., to Thomson-CSF. Binary word processing method using a high-speed sequential adder. 4,336,600, Cl. 364-785.000.

Houseknecht, Gary L.: *See—*
Brower, Boyd G.; and Houseknecht, Gary L., 4,336,570, Cl. 362-4.000.

How, Thien V.: *See—*
Ashmore, Michael P.; How, Thien V.; and Rolfe, Peter, 4,335,617, Cl. 73-861.250.

Howe, Dennis G.; Marchant, Alan B.; and Wrobel, Joseph J., to Eastman Kodak Company. Optical disc structure, method and apparatus physically optimized for writing and reading with a single wavelength. 4,336,545, Cl. 346-1.100.

Howe, Floyd M. Combination belt and disk sander machine. 4,335,542, Cl. 51-3.000.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2-Substituted-4-aryl-5-thiazolecarboxylic acids and their derivatives as safening agents. 4,336,389, Cl. 548-201.000.

Hoyer, Ernst: *See—*
Schwaiger, Gunther; and Hoyer, Ernst, 4,336,190, Cl. 260-149.000.

Huang, Sun Y.: *See—*
Giglia, Robert D.; and Huang, Sun Y., 4,335,938, Cl. 350-357.000.

Huber, Hans P.: *See—*
Findeis, Gunter; Fergg, Berthold; Osegowitsch, Viktor; Huber, Hans P.; and Meckl, Heinz, 4,335,956, Cl. 355-27.000.

Huckins, Charles M.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 4,336,518, Cl. 335-205.000.

Hudson, Patricia M.: *See—*
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,336,186, Cl. 260-112.50R.

Huebner, Friedhelm; and Weiffen, Karl-Heinz, to Klockner-Humboldt-Deutz AG. Valve for a wet jigging machine for separating minerals. 4,336,132, Cl. 209-500.000.

Huettner, Robert E.: *See—*
Vernon, John H.; Grandmaison, John P.; and Huettner, Robert E., 4,336,588, Cl. 364-200.000.

Hughes Aircraft Company: *See—*
Ladd, Glenn O., Jr., 4,336,549, Cl. 357-15.000.

Hulshof, Lumbertus A., to Hercules Incorporated. Process for the preparation of damascenone. 4,336,401, Cl. 560-106.000.

Hultgren, Claes L. Miniature slide storage tray and method of using same. 4,335,989, Cl. 414-405.000.

Humerickhouse, Billy J.: *See—*
Beatty, Bobby D.; Daniel, Russell D.; Humerickhouse, Billy J.; and Williams, Richard, 4,335,656, Cl. 102-340.000.

Hung, Chuan-Yung: *See—*
Shipp, Robert A.; and Hung, Chuan-Yung, 4,336,448, Cl. 235-92.0MS.

Hunter Douglas International, N.V.: *See—*
Frentzel, Kurt H.; and Oskam, Herman, 4,335,775, Cl. 160-177.000.

Hurd, Lyle E., to Toro Company, The. Control system for power equipment. 4,335,566, Cl. 56-11.800.

Hurst Performance, Inc.: *See—*
Vancha, John, 4,336,605, Cl. 367-105.000.

Huseby, Rolf M.: *See—*
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,336,186, Cl. 260-112.50R.

Hyatt, Michael V.: *See—*
Quist, William E.; Hyatt, Michael V.; and Axter, Sven E., 4,336,075, Cl. 148-2.000.

Hyde, Richard E.: *See—*
Carmichael, Lee T.; Hyde, Richard E.; and Smith, Gary L., 4,335,893, Cl. 280-42.000.

Hylsa, S.A.: *See—*
Guzman-Bofill, Carlos; and Dominguez-Ahedo, Carlos, 4,336,063, Cl. 75-35.000.

i f m electronic GmbH: *See—*
Buck, Robert; and Ozech, Ingo S., 4,336,491, Cl. 323-326.000.

Iatron Laboratories, Inc.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsu'.a, Tadami, 4,336,331, Cl. 435-24.000.

Ichiko Industries Limited: *See—*
Takata, Yasunobu, 4,336,572, Cl. 362-66.000.

Ichinohe, Shoji: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,336,251, Cl. 424-184.000.

Ichinose, Noboru; Yokomizo, Yuhji; and Katsura, Masaki, to Tokyo Shibaura Electric Co., Ltd. Oxide negative resistance element. 4,336,163, Cl. 252-518.000.

Icking, Eugen: *See—*
Diener, Arnulf; Laucht, Walter; and Icking, Eugen, 4,335,870, Cl. 266-193.000.

Ida, Edward S., to Du Pont de Nemours, E. I., and Company. Fail-safe apparatus. 4,336,461, Cl. 250-551.000.

Idelson, Elbert M., to Polaroid Corporation. Silver halide developing agents. 4,336,405, Cl. 562-448.000.

Igelbuscher, Heinrich: *See—*
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,335,708, Cl. 126-442.000.

Ihlein, Walter, to Siemens Aktiengesellschaft. Insulating tape for fabricating an insulating sleeve for electric conductors impregnated with

a thermo-setting epoxy resin/acid anhydride mixture. 4,336,302, Cl. 428-324.000.

Ihli, Vincent V. Water storage and distribution system. 4,335,977, Cl. 405-52.000.

Iijima, Kenzaburo: *See—*
Sata, Takeo; Takamura, Masayuki; Iijima, Kenzaburo; and Fukuda, Norio, 4,336,066, Cl. 75-211.000.

Iijima, Takashi: *See—*
Eda, Nobuo; Iijima, Takashi; and Toyoguchi, Yoshinori, 4,336,315, Cl. 429-194.000.

Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,335,687, Cl. 123-198.00F.

Ikegami, Tadashi: *See—*
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Mizutani, Shigeru, 4,336,352, Cl. 525-240.000.

Imada, Kiyoshi: *See—*
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,336,211, Cl. 264-22.000.

Imaki, Takao; Mikasa, Hajime; and Sakai, Niro, to Horiba Limited. Non-dispersion type infrared analyzer for simultaneously determining plural components. 4,336,453, Cl. 250-344.000.

Imgram, Richard H.: *See—*
Ganz, Frederick M.; Cermignani, Justine D.; and Imgram, Richard H., 4,336,543, Cl. 343-705.000.

Imperial Chemical Industries Limited: *See—*
Backhouse, Alan J.; Bromley, Charles; and Thompson, Morice W., 4,336,177, Cl. 523-201.000.
Dalton, Raymond F., 4,336,231, Cl. 423-24.000.
Powell, Keith A.; and Collinson, Barbara A., 4,336,334, Cl. 435-146.000.

Inada, Koichi: *See—*
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,336,049, Cl. 65-3.120.

Inagaki, Yoshio: *See—*
Fujita, Shinsaku; Koyama, Koichi; Inagaki, Yoshio; and Waki, Kokichi, 4,336,322, Cl. 430-242.000.

Incom International Inc.: *See—*
McCloskey, Albert R., 4,335,924, Cl. 308-72.000.

Independent Products Company, Inc.: *See—*
Bisk, Leonard; and Rogahn, Gunther, 4,335,838, Cl. 223-91.000.

Industrial Packaging Co., Inc.: *See—*
Garganese, Richard S., 4,335,830, Cl. 220-462.000.

Industrial Systems, Inc.: *See—*
Scott, Bernard E., 4,335,907, Cl. 285-157.000.

Industrie Pirelli S.p.A.: *See—*
Tarantola, Luciano, 4,335,571, Cl. 57-58.520.

Inficon Leybold-Heraeus: *See—*
Chou, Tzeyang J.; and Arnon, Oded, 4,335,961, Cl. 356-361.000.

Inmos Corporation: *See—*
Sud, Rahul; and Hardee, Kim C., 4,336,466, Cl. 307-297.000.

Inoue, Tomohiro: *See—*
Koike, Mamoru; Komaki, Shigeki; Inoue, Tomohiro; Tanimoto, Akira; and Yoshida, Yoshisaburo, 4,336,530, Cl. 340-365.0VL.

Inoue, Toru; Sugiyama, Yasuo; and Onishi, Ken, to Mitsubishi Denki Kabushiki Kaisha. Error correction encoding and decoding system. 4,336,612, Cl. 371-39.000.

Institute of Gas Technology: *See—*
Weil, Sanford A.; Punwani, Dharamvir; and Bodle, William W., 4,336,125, Cl. 208-8.00R.

International Business Machines Corporation: *See—*
Chiu, George T.; Joseph, Robert R.; and Ozols, Gunars M., 4,335,506, Cl. 29-591.000.
Cole, Terence G.; and Marshall, Stuart E., 4,336,508, Cl. 331-113.00R.
Conly, Douglas J.; Larson, David D.; and Riddle, Stanley T., 4,335,952, Cl. 355-14.00R.
Cranna, Darlene K. N., 4,335,858, Cl. 242-195.000.
Hetherington, Richard J.; Melvin, George E.; Milkovich, Stephen A.; and Urfer, Ernest N., 4,336,088, Cl. 156-89.000.
Jaggi, Rudolf, 4,336,523, Cl. 340-825.790.
Kotecha, Harish N.; and Wiedman, Francis W., III, 4,336,603, Cl. 365-182.000.
Morlec, Emile; Reynes, Daniel; and Suzzoni, Jean-Pierre, 4,336,423, Cl. 179-18.0GF.
Pawletko, Joseph P., 4,335,967, Cl. 400-119.000.

International Chemical Engineering Establishment: *See—*
Prohn, Christiaan M., 4,336,222, Cl. 264-519.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,336,164, Cl. 252-522.00R.

International Harvester Co.: *See—*
Swanson, William C.; and Orsborn, Jesse H., 4,335,561, Cl. 56-10.200.
Swanson, William C., 4,335,894, Cl. 280-43.230.

International Measurement & Control Company: *See—*
Dybel, Frank R.; Dybel, William F.; and MacDonald, Kenneth, 4,335,614, Cl. 73-774.000.

International Paper Company: *See—*
Yasnovsky, V. M.; and MacDonald, Donald M., 4,336,370, Cl. 536-58.000.

International Standard Electric Corporation: *See—*
Black, Philip W.; and Irven, John, 4,335,934, Cl. 350-96.330.
Maries, Alan; and Shreeve, Francesca M., 4,336,153, Cl. 252-182.000.
Schmidt, Peter; Brunn, Otto; Forker, Dieter; and Schmidt, Willi, 4,335,492, Cl. 29-25.130.

Intersil, Inc.: *See—*
Weir, Basil, 4,336,526, Cl. 340-347.0AD.

Intertechnique: *See—*
Jacq, Georges; and Damico, Pierre, 4,336,590, Cl. 364-418.000.

Irven, John: *See—*
Black, Philip W.; and Irven, John, 4,335,934, Cl. 350-96.330.

Irwin, Lawrence F.; and Millray, Robert, to Augerscope, Inc. Internal pipe wrench. 4,335,632, Cl. 81-446.000.

Irwin, Rodney C., to Koppers Company, Inc. Aligning device. 4,336,107, Cl. 202-239.000.

Ise, Junichi: *See—*
Suzuki, Toshio; Ise, Junichi; Yanabu, Satoru; and Mizoguchi, Hitoshi, 4,336,414, Cl. 174-14.00R.

Iseler, Kenneth A.; and Shah, Vinod C., to Budd Company, The. Flame retardant molding compound. 4,336,181, Cl. 523-501.000.

Ishi, Ichiro: *See—*
Fujita, Tsuyoshi; Yokoyama, Tomio; and Ishi, Ichiro, 4,336,551, Cl. 357-80.000.

Ishiguro, Michihiro: *See—*
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,336,202, Cl. 549-466.000.

Ishikawa, Kazumasa; Takahashi, Shin-ichi; and Yoneyama, Masahide, to Nippon Columbia Kabushiki Kaisha. Frequency characteristic adjusting circuit. 4,336,501, Cl. 330-109.000.

Ishikawa, Yoshiaki: *See—*
Motonami, Masanao; and Ishikawa, Yoshiaki, 4,335,902, Cl. 280-804.000.

Isobe, Yukihiro: *See—*
Okuyama, Kiyotaka; Hosaka, Akihiko; and Isobe, Yukihiro, 4,336,310, Cl. 428-447.000.

Isoda, Chuzo: *See—*
Fujiwara, Tsuyoshi; Sugimoto, Osamu; and Isoda, Chuzo, 4,336,341, Cl. 521-109.000.

Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, to Mitsubishi Gas Chemical Company, Inc. Process for producing carboxylic acids and/or esters thereof. 4,336,399, Cl. 560-61.000.

Isui, James B. Y.; Shaw, Rudy L.; and Caschera, Joseph, to United States of America, Air Force. Simultaneous signal detector for an instantaneous frequency measurement receiver. 4,336,541, Cl. 343-18.00E.

Itakura, Takayuki: *See—*
Oguchi, Yuzo; Itakura, Takayuki; and Kawano, Akio, 4,336,447, Cl. 235-92.0EA.

Itaya, Nobushige: *See—*
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, 4,336,194, Cl. 548-562.000.

Itek Corporation: *See—*
Quilty, John H.; and Scholten, Lawrence M., 4,336,478, Cl. 313-478.000.

Ito, Koichi: *See—*
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,336,251, Cl. 424-184.000.

Itoh, Yasuhito: *See—*
Totsune, Atsushi; Itoh, Yasuhito; and Yamabe, Hitoshi, 4,335,699, Cl. 123-568.000.

Itoi, Shigenari: *See—*
Ohba, Kanji; and Itoi, Shigenari, 4,335,888, Cl. 277-96.100.

ITT Industries, Inc.: *See—*
Berisch, Volker; and Keiner, Karl, 4,335,922, Cl. 303-6.00C.
Goertler, Horst; Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,336,482, Cl. 318-443.000.
Jackson, Thomas M.; Hodges, Robert J.; and Amphlett, Stephen L., 4,336,429, Cl. 200-67.0DB.
Lupertz, Hans-Henning, 4,335,806, Cl. 188-73.330.

Iwaki, Katsutaro: *See—*
Tanaka, Shigeru; Iwaki, Katsutaro; Matsuhashi, Hajime; and Banzai, Keiichiro, 4,336,487, Cl. 322-99.000.

Iwata, Nobuo; and Suzuki, Takami, to Ricoh Company, Ltd. Type wheel for serial printing apparatus. 4,335,970, Cl. 400-144.200.

Iyer, Raja, to Acme Resin Corporation. Resin binders for foundry sand cores and molds. 4,336,179, Cl. 523-145.000.

Izuno, Sadami; and Kiyomitsu, Isao, to Toyo Kogyo Co., Ltd.; and Delta Kogyo Co., Ltd. Reclining arrangement. 4,335,917, Cl. 297-366.000.

J. B. Systems, Ltd.: *See—*
Bratschitsch, John, 4,335,982, Cl. 406-48.000.

J. I. Case Company: *See—*
Schmitz, Floyd A., Jr., 4,335,909, Cl. 292-5.000.

J. M. Huber Corporation: *See—*
Lamond, Trevor G., 4,336,219, Cl. 264-117.000.
Wason, Satish K., 4,336,245, Cl. 424-49.000.

J. M. Voith GmbH: *See—*
Waldvogel, Hartmut, 4,335,675, Cl. 118-126.000.

J. S. Staedtler, Firma: *See—*
Schnorrer, Heinrich, 4,336,071, Cl. 106-170.000.

Jackel, Klaus-Peter; Heil, Gunter; and Spoor, Herbert, to BASF Aktiengesellschaft. Curable coating agents and process for the production of scratch-resistant coatings on plastics. 4,336,309, Cl. 428-447.000.

Jackson, David M., to Kimberly-Clark Corporation. Wrapped superabsorbent core tampon. 4,335,722, Cl. 128-285.000.

Jackson, Thomas M.; Hodges, Robert J.; and Amphlett, Stephen L., to ITT Industries, Inc. Switch unit. 4,336,429, Cl. 200-67.0DB.

Jacobs, Lawrence J.; and Bozzuto, Carl R., to Combustion Engineering, Inc. Method for recovery and reuse of ammonia in ammonia-base sulfite cooking liquors. 4,336,102, Cl. 162-30.100.

Jacobsen, Stephen C.: *See—*
Stephen, Robert L.; Kablitz, Carl; van Dura, Dietz; Atkin, Curtis L.; and Jacobsen, Stephen C., 4,335,716, Cl. 128-213.00A.

Jacobson, Peter E.: *See—*
Allen, Terry S.; and Jacobson, Peter E., 4,335,927, Cl. 339-5.00R.

Jacq, Georges; and Damico, Pierre, to Intertechnique. Devices for controlling gas flows. 4,336,590, Cl. 364-418.000.

Jacquet, Maurice A.; and Lignereux, Jean-Pierre, to Societe Anonyme Francaise du Ferodo. Vehicle air conditioner blower and mount. 4,335,646, Cl. 98-2.000.

Jacyno, Henry, to Singer Company, The. Evaporator pressure regulator. 4,335,742, Cl. 137-494.000.

Jagenberg Werke AG: *See—*
Zodrow, Rudolf, 4,336,098, Cl. 156-568.000.

Jaggi, Rudolf, to International Business Machines Corporation. Superconductive switching and storage device. 4,336,523, Cl. 340-825.790.

James, Harold S.; and Roseveare, Ronald N., to Babcock & Wilcox Company, The. Zero force touch probe. 4,335,517, Cl. 33-174.00L.

Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., to Cooper Industries. Output coupling for concrete mixer transmission. 4,335,963, Cl. 366-63.000.

Janicki, Mark: *See—*
Bryant, Jack; and Janicki, Mark, 4,336,454, Cl. 250-381.000.

Jansen, Martin B.: *See—*
Saliger, Kenneth C.; and Jansen, Martin B., 4,335,904, Cl. 285-18.000.

Jansons, Arnolds: *See—*
Hill, Eugene; Jansons, Arnolds; and Truchard, James J., 4,336,607, Cl. 367-123.000.

Japan Organo Company, Ltd.: *See—*
Miyahara, Akimitsu; Kanazawa, Toshihiko; Takahashi, Kokaji; Ushikubo, Hiroji; and Kawano, Kuniaki, 4,335,746, Cl. 137-576.000.

Japan Storage Battery Company, Ltd.: *See—*
Yonezu, Kunio; Tsubota, Masaharu; and Takahashi, Katsuhiro, 4,336,314, Cl. 429-66.000.

Japanese National Railways: *See—*
Mitsumoto, Takashi; and Nakashima, Hiroshi, 4,335,747, Cl. 137-614.060.

Jarboe, Joseph E. Woodburning stove. 4,335,702, Cl. 126-15.00R.

Jarrett, Robert B.: *See—*
Bynum, Byron G.; and Jarrett, Robert B., 4,336,507, Cl. 331-108.00D.

Jenoptik Jena GmbH: *See—*
Pohlack, Hubert, 4,335,935, Cl. 350-166.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Bethe, Hans A.; and Chang, Ching S., 4,336,230, Cl. 423-3.000.

Jidosha Denki Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Kyoji; and Furuya, Takeo, 4,336,517, Cl. 335-205.000.

Jodlowski, Ronald F.: *See—*
Kang, Chunghee K.; Jodlowski, Ronald F.; Donnelly, Thomas H.; and Warner, William D., 4,336,271, Cl. 426-55.000.

John Fluke Mfg. Co., Inc.: *See—*
Meyer, Donald G., 4,336,505, Cl. 331-1.00R.

John, William W.: *See—*
Chen, Tsong M.; Heiba, El-Ahmadi I.; and John, William W., 4,336,052, Cl. 71-28.000.

Johnson, Bruce K.; and Launie, Kenneth J., to Polaroid Corporation. Camera with structure for adjusting lens disc velocity and calibration method. 4,335,945, Cl. 354-197.000.

Johnson, David P. Prime window unit installation system. 4,335,550, Cl. 52-99.000.

Johnson, Earl R., to Loffland Brothers Company. Multiple biscuit clutch or brake. 4,335,808, Cl. 192-85.0AB.

Johnson, Robert C. Ethylene glycol antifreeze repurification apparatus. 4,336,133, Cl. 210-95.000.

Johnston, Samuel R. Irrigation device. 4,335,719, Cl. 128-246.000.

Jolin, Marcel, to Dustell Ltee. Mobile dust collector used on quarries. 4,336,041, Cl. 55-341.00R.

Joly, Luc: *See—*
Oliva, Ambro; and Joly, Luc, 4,335,616, Cl. 73-861.050.

Jones, Brian C., to Combustion Engineering, Inc. Solid fuel feed system for a fluidized bed. 4,335,662, Cl. 110-263.000.

Jones, Carl R.: *See—*
Ross, Kenneth B.; and Jones, Carl R., 4,336,274, Cl. 426-643.000.

Jones, Earle H., to Boeing Company, The. Power rail support apparatus. 4,335,807, Cl. 191-32.000.

Jones, Harold G. Game call. 4,335,539, Cl. 46-179.000.

Jones, Leon. Milking machine system, and pressure regulator incorporated therein. 4,335,743, Cl. 137-494.000.

Jones, Peter A., to Melford Engineering Limited. Rotary brush mounting. 4,335,482, Cl. 15-87.000.

Jones, Raymond L. Drafting device for producing concentric lines. 4,335,515, Cl. 33-27.00L.

Jorgensen, Hans; Sinnerup, Ib O.; and Danborg, Ole E., to Radiometer A/S. Liquid dosage piston pump. 4,336,000, Cl. 417-53.000.

Joseph, Robert R.: *See—*
Chiu, George T.; Joseph, Robert R.; and Ozols, Gunars M., 4,335,506, Cl. 29-591.000.

Jowitt, Peter F.: *See—*
Broadhurst, Jeffrey C.; Fletcher, Richard A.; and Jowitt, Peter F., 4,336,291, Cl. 428-101.000.

Judd, Malcolm L.: *See—*
Brown, Barry M.; Judd, Malcolm L.; and Schindler, Roger N., 4,336,328, Cl. 430-569.000.

Julie, Jean-Jacques: *See—*
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., 4,336,600, Cl. 364-785.000.

Jung, Johann: *See—*
Zech, Bernd; Buschmann, Ernst; and Jung, Johann, 4,336,055, Cl. 71-76.000.

Junghanel, Arnold, to Alfelder Eisenwerke Carl Heise Kom. Ges. Apparatus for measuring the filling level of containers. 4,335,607, Cl. 73-290.00R.

Jungverdorben, Hermann-Josef: *See—*
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, 4,336,214, Cl. 264-49.000.

Kaas, Werner; Borggrefe, Hans-Helmut; and Unger, Klaus-Dieter. Method for recovering residual matter accumulated in the production and machining of steel. 4,336,218, Cl. 264-111.000.

Kabadi, Balachandra N.; and Farkas, Michael S., to E. R. Squibb & Sons, Inc. Apparatus for holding a syringe and filling an ampule. 4,335,760, Cl. 141-129.000.

Kabashima, Katsuhiko: *See—*
Nakano, Masao; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,336,465, Cl. 307-238.300.

Kablitz, Carl: *See—*
Stephen, Robert L.; Kablitz, Carl; van Dura, Dietz; Atkin, Curtis L.; and Jacobsen, Stephen C., 4,335,716, Cl. 128-213.00A.

Kabushiki Kaisha Morita Seisakusho: *See—*
Suzuki, Masakazu, 4,336,563, Cl. 361-93.000.

Kai, Seiichi: *See—*
Hosaka, Hirokazu; Tanimoto, Kenji; Tanaka, Kunihiko; Morita, Toshiharu; Shiota, Katsuyuki; Ueda, Yuji; and Kai, Seiichi, 4,336,109, Cl. 203-34.000.

Kaktovics, David: *See—*
Ashcroft, Richard I.; and Kaktovics, David, 4,335,960, Cl. 356-240.000.

Kalfa, Horst; Schubert, Bruno; Brunmayer, Peter; and Gellermann, Siegfried, to DECHEMA. Equipment for testing materials for stress corrosion cracking. 4,335,615, Cl. 73-799.000.

Kalt, Charles G.; and Babcock, Bryce. Reflective display and method of making same. 4,336,536, Cl. 340-783.000.

Kaltenbach, Dieter. Circular saw. 4,335,637, Cl. 83-452.000.

Kamata, Susumu: *See—*
Nagata, Wataru; and Kamata, Susumu, 4,336,381, Cl. 544-313.000.

Kamijo, Ken: *See—*
Nagashima, Hideyuki; and Kamijo, Ken, 4,335,919, Cl. 297-362.000.

Kamiya, Yoji: *See—*
Munekata, Kenichi; Ohkoshi, Fumihiko; Kamiya, Yoji; and Hasegawa, Toshifumi, 4,335,500, Cl. 29-568.000.

Kanada, Eiji; Tsubai, Yasuo; Yamada, Shoji; Takaya, Yoshikazu; and Senga, Takao, to Mitsubishi Paper Mills, Ltd. Silver halide photographic materials. 4,336,321, Cl. 430-234.000.

Kanamaru, Hisanobu; Tohkairin, Akira; Tatsumi, Hideo; and Okabe, Moisei, to Hitachi, Ltd. Method of coupling two concentrically disposed members. 4,335,496, Cl. 29-520.000.

Kanazawa, Toshihiko: *See—*
Miyahara, Akimitsu; Kanazawa, Toshihiko; Takahashi, Kokaji; Ushikubo, Hiroji; and Kawano, Kuniaki, 4,335,746, Cl. 137-576.000.

Kane, Jeffrey, to Ferranti Limited. Semiconductor resistive network. 4,336,528, Cl. 340-347.0DA.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Fushiki, Yasuo; Abe, Masaharu; and Uekita, Masakazu, 4,336,297, Cl. 428-284.000.

Kaneko, Takashi: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,336,212, Cl. 264-22.000.
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,336,350, Cl. 525-211.000.

Kang, Chunghee K.; Jodlowski, Ronald F.; Donnelly, Thomas H.; and Warner, William D., to Swift Independent Packing Company. Tenderization of meat by natural enzyme control. 4,336,271, Cl. 426-55.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Horiike, Tetsuro; Okimoto, Tomoyuki; and Shiozaki, Tomoharu, 4,336,170, Cl. 521-55.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Bergmann, Gerhard; and Wade, Heinz, 4,335,590, Cl. 66-207.000.

Karlen, Nial T.: *See—*
Gylden, Nils O.; Karlen, Nial T.; Andersson, Jarl B. E.; and Andersson, Anders G. T., 4,336,209, Cl. 264-3.00R.

Kartinos, Nicholas J., to Baxter Travenol Laboratories, Inc. Process for reclaiming biliverdin-containing fluids. 4,336,157, Cl. 252-408.000.

Kasagi, Takao: *See—*
Takeda, Kenji; Hattori, Yoshiyuki; and Kasagi, Takao, 4,336,007, Cl. 418-183.000.

Kasei Optonix, Ltd.: *See—*
Nishimura, Yoshitugu; and Kotera, Noboru, 4,336,154, Cl. 252-301.40H.

Kashyap, Satish; Dunn, John G.; Woods, Lorne; and Vachon, Frank, to Canadian Patents & Dev. Limited. Microwave apparatus for heating liquid in a closed plastic container. 4,336,435, Cl. 219-10.55F.

Katayama, Toshiaki: *See—*
Edamura, Mizuo; Takamoto, Shyunji; Furuitsu, Satoshi; Bekku, Norikatsu; and Katayama, Toshiaki, 4,336,076, Cl. 148-3.000.

Katayama, Yoshihiko: *See—*
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Mizutani, Shigeru, 4,336,352, Cl. 525-240.000.
Kato, Yasuo: *See—*
Okubo, Tsuneo; Kato, Yasuo; and Matsuoka, Genya, 4,336,597, Cl. 364-560.000.
Katoh, Norihisa: *See—*
Seki, Kunio; and Katoh, Norihisa, 4,336,504, Cl. 330-274.000.
Katscher, Erich; Knecht, Klaus; and Knaab, Heinz, to Kraftwerk Union Aktiengesellschaft AG. Method of repairing partly burnt-off fuel elements in the fuel-element pit pressurized water reactors and device therefor. 4,336,103, Cl. 376-245.000.
Katsura, Masaki: *See—*
Ichinose, Noboru; Yokomizo, Yuhji; and Katsura, Masaki, 4,336,163, Cl. 252-518.000.
Kauer, Erhard: *See—*
Herdin, Gunther; Kauer, Erhard; Muckenhuber, Maximilian; and Egger, Eugen, 4,335,686, Cl. 123-90.600.
Kawakubo, Yukio: *See—*
Kurosawa, Yukio; Kawakubo, Yukio; and Abe, Nobuo, 4,336,430, Cl. 200-144.00B.
Kawano, Akio: *See—*
Oguchi, Yuzo; Itakura, Takayuki; and Kawano, Akio, 4,336,447, Cl. 235-92.0EA.
Kawano, Kuniaki: *See—*
Miyahara, Akimitsu; Kanazawa, Toshihiko; Takahashi, Kokaji; Ushikubo, Hiroji; and Kawano, Kuniaki, 4,335,746, Cl. 137-576.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Edamura, Mizuo; Takamoto, Shyunji; Furuitsu, Satoshi; Bekku, Norikatsu; and Katayama, Toshiaki, 4,336,076, Cl. 148-3.000.
Kawasaki, Kazuhiro: *See—*
Hijikata, Toshio; and Kawasaki, Kazuhiro, 4,336,081, Cl. 148-12.00B.
Kazewych, Bohdan, to General Motors Corporation. Window drive arrangement. 4,335,541, Cl. 49-360.000.
Keeney, Donald A.; and Scherbring, David J., to Toro Company, The. Reel to bedknife adjustment system. 4,335,569, Cl. 56-249.000.
Keiner, Karl: *See—*
Berisch, Volker; and Keiner, Karl, 4,335,922, Cl. 303-6.00C.
Kelly, Thomas L. Extruded aluminum termination bar. 4,335,546, Cl. 52-58.000.
Kemmner, Ulrich: *See—*
Rose, Klaus; Kemmner, Ulrich; and Ruhl, Karl, 4,336,002, Cl. 417-203.000.
Kempter, Fritz E.: *See—*
Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, 4,336,116, Cl. 204-159.110.
Kendall Company, The: *See—*
Kolstedt, Mark W., 4,335,726, Cl. 128-400.000.
Patel, Bhupendra C., 4,335,723, Cl. 128-349.00B.
Rappleyea, Frederick A., 4,335,472, Cl. 2-421.000.
Kennametal Inc.: *See—*
Goodfellow, Robert D., 4,335,794, Cl. 175-337.000.
Kent, Ronald I., to Stone Container Corporation. Partitioned stacking crate and blank therefor. 4,335,843, Cl. 229-27.000.
Kenton, Joseph R., to Phillips Petroleum Company. Fertilizer solutions stabilized with inorganic acids. 4,336,053, Cl. 71-40.000.
Kerr Concrete Pipe Company: *See—*
Hand, George E., 4,336,013, Cl. 425-145.000.
Kessler, Milton; and Kessler, Ronald N. Coat hanger carrier. 4,335,839, Cl. 294-142.000.
Kessler, Ronald N.: *See—*
Kessler, Milton; and Kessler, Ronald N., 4,335,839, Cl. 294-142.000.
Khaitun, Galina G.: *See—*
Vorozhtsov, Georgy N.; Masanova, Natalia N.; Feldbljum, Nikolai B.; Alexeev, Vasily I.; Shigalevsky, Vadim A.; Solomatin, Georgy G.; Shulepova, Olga I.; Khaitun, Galina G.; and Gordeeva, Nadezhda V., 4,336,383, Cl. 546-52.000.
Kidde Consumer Durables Corp.: *See—*
Gilman, Lester, 4,336,575, Cl. 362-147.000.
Kiefer, Henry, to C. J. Edwards Company. Toggle bolt clamp. 4,335,873, Cl. 269-228.000.
Kierstead, Richard W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,336,382, Cl. 544-374.000.
Kijima, Yasuhiko: *See—*
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Kikuchi, Tadao: *See—*
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Kim, Young D.: *See—*
Dunnavant, William R.; and Kim, Young D., 4,336,342, Cl. 523-144.000.
Kimberly-Clark Corporation: *See—*
Jackson, David M., 4,335,722, Cl. 128-285.000.
Matthews, Billie J., 4,335,721, Cl. 128-285.000.
Kimura, Tadao. Tin-rich lead-bronze based forged and rolled materials. 4,336,082, Cl. 148-433.000.
Kimura, Takeo: *See—*
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,335,957, Cl. 355-30.000.
Kincaid, Robert A. Shoplifting alarm system and method. 4,336,531, Cl. 340-568.000.
Kinetico, Inc.: *See—*
Prior, William C., 4,336,134, Cl. 210-127.000.
King, Francis D.: *See—*
Hadley, Michael S.; and King, Francis D., 4,336,259, Cl. 424-265.000.
Kinnear, Joseph D., to Brad Harrison Company. Power cable connector with retention spring. 4,335,931, Cl. 339-217.00S.
Kipping, Vernon L. System for method for production of marine food using submerged platforms. 4,335,680, Cl. 119-3.000.
Kirchmayr, Rudolf: *See—*
Berner, Godwin; and Kirchmayr, Rudolf, 4,336,366, Cl. 528-89.000.
Kirk, Bryan R.: *See—*
Francis, John F.; Kirk, Bryan R.; and Terry, John C., 4,335,508, Cl. 30-47.000.
Kirkley, William H. Osteotomy guide. 4,335,715, Cl. 128-92.0EB.
Kirschner, Francis, to Soundcoat Company, Inc., The. Sound absorbing material. 4,335,802, Cl. 181-290.000.
Kishimoto, Michimasa: *See—*
Taniyama, Tsukasa; Sekino, Masaaki; and Kishimoto, Michimasa, 4,336,138, Cl. 210-321.400.
Kiss, Zoltan: *See—*
Bucsky, Gyorgy; Kiss, Zoltan; Matyas, Ivan; Pazmany, Jozsef; Selyem, Gyula; and Tatrai, Lajos, 4,335,618, Cl. 73-861.560.
Kistler, Viktor, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Control apparatus for controlling a feed movement in a gear cutting machine. 4,335,985, Cl. 409-3.000.
Kita, Nobuyuki: *See—*
Nagashima, Akira; and Kita, Nobuyuki, 4,336,319, Cl. 430-165.000.
Kitamura, Shigeo; Yoshioka, Kazuo; Seriyama, Yoshiharu; and Misuta, Hiroshi, to Nippon Soda Company Limited; and Shionogi Company Limited. Process for the production of phenylmalonic acid monoesters. 4,336,196, Cl. 549-416.000.
Kiyomitsu, Isao: *See—*
Izuno, Sadami; and Kiyomitsu, Isao, 4,335,917, Cl. 297-366.000.
Kiyota, Hiroyuki: *See—*
Uehara, Akira; Kiyota, Hiroyuki; Miyazaki, Shigekazu; and Nakane, Hisashi, 4,336,438, Cl. 219-121.0PG.
Klank, Benno E. O. Heat conservation and storage apparatus and system. 4,335,703, Cl. 126-121.000.
Klaric, Dinko. Shelving system. 4,335,861, Cl. 248-246.000.
Kleinschmidt, Peter: *See—*
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, 4,336,214, Cl. 264-49.000.
Klockner-Humboldt-Deutz AG: *See—*
Huebner, Friedhelm; and Weiffen, Karl-Heinz, 4,336,132, Cl. 209-500.000.
Kluender, Harold C.: *See—*
Biddlecom, William G.; Kluender, Harold C.; and Woessner, Warren D., 4,336,404, Cl. 560-231.000.
Knaab, Heinz: *See—*
Katscher, Erich; Knecht, Klaus; and Knaab, Heinz, 4,336,103, Cl. 376-245.000.
Knaitner, Eugene L.: *See—*
Bubik, Leslie; Barclay, Stanley B.; Knaitner, Eugene L.; Williams, Frederic D. M.; and Alm, Bernard D., 4,335,772, Cl. 157-1.280.
Knapp, Merton C. Truck trailer load cover (tarpaulin) receiver. 4,335,915, Cl. 296-98.000.
Knecht, Klaus: *See—*
Katscher, Erich; Knecht, Klaus; and Knaab, Heinz, 4,336,103, Cl. 376-245.000.
Knepper, Larimer J., to Sperry Corporation. Electronically actuated stone trap trip mechanism. 4,335,564, Cl. 56-10.200.
Knepper, Larimer J.; and Komancheck, John J., to Sperry Corporation. Latch mechanism for combine having electronic and mechanical stone detectors. 4,335,565, Cl. 56-10.200.
Knepper, Larimer J.: *See—*
Rice, Robert L.; and Knepper, Larimer J., 4,335,563, Cl. 56-10.200.
Knize, Elmer J.; and Avers, Daniel C., to Lippy Can Company, Ltd. Can or container and lid therefor. 4,335,827, Cl. 220-284.000.
Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube. 4,336,480, Cl. 313-495.000.
Kobayashi, Kyoji; and Furuya, Takeo, to Jidosha Denki Kogyo Kabushiki Kaisha. Revolution detecting device. 4,336,517, Cl. 335-205.000.
Kobe Steel, Ltd.: *See—*
Godai, Tomokazu; Sugiyama, Tohru; and Nishikawa, Yutaka, 4,336,441, Cl. 219-137.0WM.
Koboshi, Shigeharu; and Kurematsu, Masayuki, to Konishiroku Photo Industry Co., Ltd. Method for the processing of silver halide color photographic light-sensitive materials. 4,336,324, Cl. 430-372.000.
Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., to Standard Oil Company, The. Coextrusion device. 4,336,012, Cl. 425-131.100.
Koch, Rudolf, to Siemens Aktiengesellschaft. Monolithically integrated circuit for relatively slow readout from a two-dimensional image sensor. 4,336,557, Cl. 358-213.000.
Kochendorfer, Heinrich: *See—*
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,336,006, Cl. 418-131.000.
Kochendorfer, Richard; and Vogler, Helmut, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Shaft-disc assembly. 4,335,586, Cl. 464-81.000.
Kochte, Werner W., to Scott & Fetzer Company, The. Surface cleaning machine. 4,335,486, Cl. 15-321.000.
Kodama, Churyo; Hirota, Taisuke; Ohno, Hiroshi; and Urataki, Etsuo, to Hitachi, Ltd. Fluorescent lamp having reflective layer and a method for fabricating the same. 4,336,479, Cl. 313-487.000.

Koffler, Sol; and Berry, William M., to American Tourister, Inc. Luggage case having a detachable roller assembly. 4,335,896, Cl. 280-47.170.

Kohayakawa, Ken; Ohba, Hisao; and Sano, Atuhiro, to Fuji Photo Film Co., Ltd. Method of stacking metal sheet materials. 4,336,093, Cl. 29-399.000.

Kohler, Karl-Heinz, to Audi NSU Auto Union Aktiengesellschaft. Device for generating a reference signal corresponding to a given operational state of a four-cycle internal combustion engine. 4,335,599, Cl. 73-116.000.

Kohlstadt, Hans-Peter; Ozelli, Riza N.; and Gierenz, Gerhard, to Henkel Kommanditgesellschaft auf Aktien (Henkel GaA). Aqueous binder dispersion for producing vulcanization bonds between rubber and a solid substrate. 4,336,171, Cl. 524-510.000.

Koike, Mamoru; Komaki, Shigeki; Inoue, Tomohiro; Tanimoto, Akira; and Yoshida, Yoshisaburo, to Sharp Kabushiki Kaisha. Thin keyboard with changeable key indicia. 4,336,530, Cl. 340-365.0VL.

Koivisto, Eero: *See*—
Pattiniemi, Veikko; Koivisto, Eero; Kokki, Heikki; and Heikel, Aslak R., 4,335,759, Cl. 141-5.000.

Koivunen, Seppo T.: *See*—
Hamala, Sirpa L.; Koivunen, Seppo T.; Kontturi, Anna-Kaisa; and Sarkkinen, Veli J., 4,336,189, Cl. 260-124.00R.

Kokki, Heikki: *See*—
Pattiniemi, Veikko; Koivisto, Eero; Kokki, Heikki; and Heikel, Aslak R., 4,335,759, Cl. 141-5.000.

Kolakowski, Michael A.; and Valachovic, John J., to NL Industries, Inc. Double precipitation reaction for the formation of high purity basic lead carbonate and high purity normal lead carbonate. 4,336,236, Cl. 423-435.000.

Koletar, Gabor I.; Frost, Jonathan B.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, to Synthelabo. Pyridoindole derivatives. 4,336,256, Cl. 424-256.000.

Kollmorgen Technologies Corporation: *See*—
Passlick, Theodor, 4,336,100, Cl. 156-630.000.

Kolstedt, Mark W., to Kendall Company, The. Therapeutic device with temperature and pressure control. 4,335,726, Cl. 128-400.000.

Komaki, Shigeki: *See*—
Koike, Mamoru; Komaki, Shigeki; Inoue, Tomohiro; Tanimoto, Akira; and Yoshida, Yoshisaburo, 4,336,530, Cl. 340-365.0VL.

Komancheck, John J.: *See*—
Knepper, Larimer J.; and Komancheck, John J., 4,335,565, Cl. 56-10.200.

Komiya, Osamu, to Olympus Optical Co., Ltd. Otoscope. 4,335,713, Cl. 128-9.000.

kommandiittiyhtio Finnpipette Osmo A. Suovaniemi: *See*—
Tervamaki, Jukka; and Suovaniemi, Osmo, 4,335,621, Cl. 73-863.320.

Kondo, Tsuneyuki, to Toray Industries, Inc. Process for absorptive separation of cyclohexene. 4,336,410, Cl. 585-827.000.

Konishi, Hideki, to Nissan Motor Co., Ltd. Altitude compensation ignition system. 4,335,691, Cl. 123-410.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Koboshi, Shigeharu; and Kuramatsu, Masayuki, 4,336,324, Cl. 430-372.000.

Kontturi, Anna-Kaisa: *See*—
Hamala, Sirpa L.; Koivunen, Seppo T.; Kontturi, Anna-Kaisa; and Sarkkinen, Veli J., 4,336,189, Cl. 260-124.00R.

Koppers Company, Inc.: *See*—
Irwin, Rodney C., 4,336,107, Cl. 202-239.000.
Miller, A. Leslie, 4,335,869, Cl. 266-158.000.

Kopse, Odon: *See*—
Buck, Rainer; Kopse, Odon; and Amaya, Nestor R., 4,335,601, Cl. 73-119.00A.

Kopylov, Leonid N.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Koranek, David J.: *See*—
Henson, Edwin R.; and Koranek, David J., 4,336,384, Cl. 546-327.000.

Korbel, Adrian C., to Deere & Company. Grapple pivot joint with swing dampener. 4,335,914, Cl. 294-86.00R.

Koshugi, Junichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparing porous shaped material of acylated chitin derivative. 4,336,070, Cl. 106-122.000.

Kotani, Matahira: *See*—
Matsumoto, Masafumi; Kotani, Matahira; and Sasaki, Hiromu, 4,336,547, Cl. 346-75.000.

Kotecha, Harish N.; and Wiedman, Francis W., III, to International Business Machines Corp. Three terminal electrically erasable programmable read only memory. 4,336,603, Cl. 365-182.000.

Kotera, Noboru: *See*—
Nishimura, Yoshitugu; and Kotera, Noboru, 4,336,154, Cl. 252-301.40H.

Kotov, Valentin A.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Kotowski, Thomas W., to General Motors Corporation. H-Switch having short to plus protection. 4,336,562, Cl. 361-88.000.

Koumura, Masahiko; and Mizuno, Hiroshi, to Rinnai Kabushiki Kaisha. Door locking apparatus. 4,335,912, Cl. 292-336.300.

Koves, Thomas. Artist's sketch box tray and carrying case for the same. 4,335,812, Cl. 206-1.800.

Koyama, Koichi: *See*—
Fujita, Shinsaku; Koyama, Koichi; Inagaki, Yoshio; and Waki, Kokichi, 4,336,322, Cl. 430-242.000.

Koyama, Masahiro: *See*—
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, 4,335,957, Cl. 355-30.000.

Koyama, Shuntaro; Miyamoto, Tomohiko; and Hirato, Mizuho, to Agency of Industrial Science and Technology, The. Fluidized bed reactor. 4,336,227, Cl. 422-111.000.

Koyama, Tsuneyuki; and Yasutake, Katsuya. Recorded tape travel control system. 4,336,559, Cl. 360-73.000.

Kozacka, Frederick J.; and Belcher, Richard A. Electric fuse. 4,336,521, Cl. 337-248.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Figlhuber, Dietgar; Gallwas, Johannes; Weber, Robert; and Weber, Jakob, 4,336,104, Cl. 376-249.000.

Kraftwerk Union Aktiengesellschaft AG: *See*—
Katscher, Erich; Knecht, Klaus; and Knaab, Heinz, 4,336,103, Cl. 376-245.000.

Kramer, William D.; and Born, Ellis H., to Abex Corporation. Crane swing control. 4,336,003, Cl. 417-217.000.

Krasin, F. Elvin: *See*—
United States of America, National Aeronautics and Space Administration; Carson, Lansing M.; and Krasin, F. Elvin, 4,336,616, Cl. 455-202.000.

Krebs, Paul B.: *See*—
Frey, Max; and Krebs, Paul B., 4,335,886, Cl. 277-25.000.

Kreitner, Ludwig: *See*—
Leutner, Bernd; Schlimper, Hans-Ulrich; Roth, Dieter; Kreitner, Ludwig; and Spahn, Heinrich, 4,336,234, Cl. 423-329.000.

Kreps, Ralph L. Hot water heating system. 4,335,850, Cl. 237-54.000.

Krishnakumar, Suppayan M.: *See*—
Collette, Wayne N.; Krishnakumar, Suppayan M.; and Mahajan, Gautam K., 4,335,821, Cl. 215-1.00C.

Kristiansen, Odd: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,336,266, Cl. 424-305.000.

Kroenke, June E. Cushioned needlework blocking board. 4,335,533, Cl. 38-141.000.

Kronstadt, Victor, to Mack Trucks, Inc. Transmission shift control mechanism. 4,335,623, Cl. 74-477.000.

Kruger, Lawrence M., to Control Data Corporation. Network for generating modified microcode addresses. 4,336,602, Cl. 364-900.000.

Kruka, Vitold R.: *See*—
Drake, Bruce S.; and Kruka, Vitold R., 4,335,964, Cl. 366-114.000.

Krumme, Hans J.; Schmidt, Martin; Schmitt, Guenter; and Schubert, Wolfgang, to Siemens Aktiengesellschaft. Diagnostic radiology apparatus for producing layer images of an examination subject. 4,336,458, Cl. 250-445.00T.

Kruse, Hubert: *See*—
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,336,025, Cl. 8-527.000.

Krussig, Karlheinz F., to Du Pont de Nemours, E. I., and Company. Apparatus for coating a web with a viscous coating material. 4,335,672, Cl. 118-50.000.

Kubota, Naohiro: *See*—
Nakahara, Yutaka; Shibata, Toshihiro; and Kubota, Naohiro, 4,336,183, Cl. 524-95.000.

Kudryk, Val; and Goffman, Martin, to Asarco Incorporated. Removal of mercury from sulfuric acid. 4,336,237, Cl. 423-531.000.

Kuessner, Klaus: *See*—
Appl, Max; Wagner, Ulrich; Henrici, Hans J.; Kuessner, Klaus; Volkamer, Klaus; and Fuerst, Ernst, 4,336,233, Cl. 423-228.000.

Kukolja, Stjepan, to Eli Lilly and Company. Penicillin conversion by halogen electrophiles and anti-bacterials derived thereby. 4,336,191, Cl. 260-239.00A.

Kukucka, William P.; and Daughton, John W., to Xerox Corporation. Reproduction machine with recirculating document handler diagnostics. 4,335,949, Cl. 355-3.00R.

Kulle, Lee K.; and Larson, Kenneth W., to Baxter Travenol Laboratories, Inc. Enteral feeding container. 4,335,770, Cl. 150-8.000.

Kumagai, Morio, to Trio Kabushiki Kaisha. Control generator for use in broadcast receiver including improved signal level indicator. 4,336,534, Cl. 340-753.000.

Kume, Kazunari; and Yamaguchi, Sizuo, to Citizen Watch Co., Ltd. Digital input means for miniature type electronic devices. 4,336,609, Cl. 368-188.000.

Kunze, Fred R.: *See*—
Stachowiak, Claude R.; and Kunze, Fred R., 4,335,801, Cl. 181-213.000.

Kupka, Genevieve L.; and Zar-Ayan, Mehdi, to PCUK Produits Chimiques Ugine Kuhlmann. Process for stabilizing mixtures of gasoline and methanol. 4,336,032, Cl. 44-56.000.

Kura, Kohei: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,373, Cl. 542-447.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,374, Cl. 542-469.000.

Kuraray Co., Ltd.: *See*—
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,336,202, Cl. 549-466.000.

Kuratsuji, Takatoshi: *See*—
Shiozaki, Masahiro; Nawata, Kiyoshi; Wada, Osamu; Tsunawaki, Kiyokazu; Kuratsuji, Takatoshi; Funakoshi, Wataru; and Suzuki, Togi, 4,336,307, Cl. 428-398.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Koshugi, Junichi, 4,336,070, Cl. 106-122.000.

Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Controlled disengaging device in automatic exposure camera of the lens stop value control type. 4,335,946, Cl. 354-228.000.

Kurematsu, Masayuki: *See*—
Koboshi, Shigeharu; and Kurematsu, Masayuki, 4,336,324, Cl. 430-372.000.

Kurihara, Mamoru: *See*—
Akiyama, Seiji; Kurihara, Mamoru; and Ueki, Kazuhiko, 4,335,981, Cl. 405-221.000.

Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,336,331, Cl. 435-24.000.

Kurosawa, Yukio; Kawakubo, Yukio; and Abe, Nobuo, to Hitachi, Ltd. Vacuum interrupter. 4,336,430, Cl. 200-144.00B.

Kurotaki, Kiyomitu. Smoke collecting and exhausting system for a roaster. 4,335,705, Cl. 126-299.00R.

Kuse, Dieter; Wiederkehr, Heinz; and Winkler, Norbert, to BBC Brown, Boveri & Company, Limited. Device for the sterilization of liquids by means of ultraviolet rays. 4,336,456, Cl. 250-436.000.

Kutovoi, Andrei N.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Kuwabara, Kiyoharu: *See*—
Okumiya, Masataro; and Kuwabara, Kiyoharu, 4,336,339, Cl. 501-103.000.

Laboratorio Guidotti & C. S.p.A.: *See*—
Sagramora, Giorgio, 4,336,398, Cl. 560-59.000.

Lacroix, Hubert: *See*—
Debayeux, Christian; Lacroix, Hubert; and Sternicha, Felix, 4,335,676, Cl. 118-303.000.

Lacroix, Roger, to Ciba-Geigy Corporation. Liquid preparation of an anionic dye of the disazo class. 4,336,026, Cl. 8-527.000.

Ladd, David L., to SmithKline Corporation. Guanidinopyrimidine compounds, compositions and method of using as a diuretic. 4,336,254, Cl. 424-251.000.

Ladd, David L., to SmithKline Corporation. Pharmaceutical compositions containing guanidinopyrimidines. 4,336,255, Cl. 424-251.000.

Ladd, Glenn O., Jr., to Hughes Aircraft Company. Schottky-barrier gate gallium arsenide field effect devices. 4,336,549, Cl. 357-15.000.

L'Air Liquide, Societe Anonyme pour d'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Lermuzeaux, Andre, 4,335,584, Cl. 62-388.000.

Lamond, Trevor G., to J. M. Huber Corporation. Method for pelletizing silica. 4,336,219, Cl. 264-117.000.

Lamontagne, Robert E.; and Scull, Jon V., to Binks Manufacturing Company. Pressure control for pumps. 4,335,999, Cl. 417-38.000.

Lander, Cecil: *See*—
Evenstad, Donovan; and Lander, Cecil, 4,336,035, Cl. 55-97.000.

Landingham, Richard L.; and Casey, Alton W., to United States of America, Energy. Chemical vapor deposition of sialon. 4,336,304, Cl. 428-336.000.

Landoni, Gianluigi; Fontani, Spartaco; and Cicchetti, Osvaldo, to Montedison S.p.A. Self-extinguishing polymeric compositions. 4,336,182, Cl. 524-416.000.

Lang, Robert J.; and Pabst, Joanne K., to Exxon Research & Engineering Co. Process for the catalytic gasification of coal. 4,336,034, Cl. 48-202.000.

Lange, Karl-Heinz, to Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG. Camera shutter assembly. 4,335,947, Cl. 354-230.000.

Langenstein, Max, to Max Langenstein Feld- und Gartengerate GmbH & Co. Filament-type vegetation trimmer with automatic line sensor. 4,335,568, Cl. 56-12.700.

Lankston, Robert J., to Gulf & Western Manufacturing Company. Temporary pipeline capping unit and method of using same. 4,335,757, Cl. 138-92.000.

Lardenois, Patrick: *See*—
Koletar, Gabor I.; Frost, Jonathan B.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,336,256, Cl. 424-256.000.

Larson, Clifford L., to Baldwin-Korthe Web Controls, Inc. Web severing device. 4,335,634, Cl. 83-13.000.

Larson, David D.: *See*—
Conly, Douglas J.; Larson, David D.; and Riddle, Stanley T., 4,335,952, Cl. 355-14.00R.

Larson, Kenneth W.: *See*—
Kulle, Lee K.; and Larson, Kenneth W., 4,335,770, Cl. 150-8.000.

Laucht, Walter: *See*—
Diener, Arnulf; Laucht, Walter; and Icking, Eugen, 4,335,870, Cl. 266-193.000.

Launie, Kenneth J.: *See*—
Johnson, Bruce K.; and Launie, Kenneth J., 4,335,945, Cl. 354-197.000.

Laxo, Darryl E., to United States of America, Navy. Apparatus for vertically stacking flat weights. 4,335,987, Cl. 414-27.000.

Leach, J. Michael; and Harvey, Walter L., to Caterpillar Tractor Co. Method of cryogenically hardening an insert in an article. 4,336,077, Cl. 148-3.000.

Lebanon Steel Foundry: *See*—
Vogel, Edward G.; and Westlund, Rodney C., 4,336,068, Cl. 106-84.000.

Lebecque, Maurice G. N. G. Magnetic electrical contact systems. 4,336,519, Cl. 335-206.000.

Lechner, Robert, to Siemens Aktiengesellschaft. Circuit arrangement for monitoring operating conditions of direct current devices. 4,336,424, Cl. 179-18.0FG.

Leddy, Ernest J., to Bell Telephone Laboratories, Incorporated. Technique for preventing salt migration. 4,336,288, Cl. 428-35.000.

Lee, Chi-Hang, to Del Monte Corporation. Vegetable and fruit preservation process. 4,336,273, Cl. 426-321.000.

Lee, Len F.: *See*—
Howe, Robert K.; and Lee, Len F., 4,336,389, Cl. 548-201.000.

Lee, Lester T. C.: *See*—
Aharoni, Shaul M.; Prevorsek, Dusan C.; Schmitt, George J.; Harpell, Gary A.; and Lee, Lester T. C., 4,336,356, Cl. 525-388.000.

Lee, Michael J.: *See*—
Donald, David K.; Lee, Michael J.; and Vaught, John L., 4,336,544, Cl. 346-1.100.

Lee, Robert G. H.: *See*—
Savard, Guy; and Lee, Robert G. H., 4,336,064, Cl. 75-60.000.

Lee, Steven N., to Rockwell International Corporation. Method of making CMOS devices. 4,335,504, Cl. 29-576.00B.

Leeke, Gordon; and Webster, Timothy, to AMF Incorporated. Filter and method of making same. 4,336,036, Cl. 55-159.000.

Lehrkind, Nancy Northup: *See*—
Northup, John D., 4,336,050, Cl. 65-82.000.

Leist, Helmut: *See*—
Hopmeier, Joachim; Leist, Helmut; and Ullrich, Georg J., 4,336,031, Cl. 23-232.00R.

Lemelson, Jerome H. Method of roll forming a composite. 4,335,494, Cl. 29-420.500.

Lenke, Dieter: *See*—
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, 4,336,263, Cl. 424-244.000.

Lenselink, Willem, to Polak's Frutal Works, B.V. Menthene nitriles and use as perfume chemicals. 4,336,204, Cl. 260-464.000.

Leon-Pekarek, Diane, to Avon Products, Inc. Hair makeup products. 4,336,246, Cl. 424-70.000.

Leonard, Willie B. Fluidic repeater. 4,335,645, Cl. 91-388.000.

Leoni, Bernard G.: *See*—
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., 4,336,600, Cl. 364-785.000.

Leopold Kostal, Firma: *See*—
Berginski, Werner E., 4,336,428, Cl. 200-61.540.

Lermuzeaux, Andre, to L'Air Liquide, Societe Anonyme pour d'Etude et l'Exploitation des Procedes Georges Claude. Process and apparatus for quick-freezing of food products. 4,335,584, Cl. 62-388.000.

Le Roux, Jean; and Plagnard, Andre, to Novatome. Sealing device for a component vertically disposed within the primary vessel of a nuclear reactor. 4,335,883, Cl. 277-3.000.

Lesarge, Kenneth: *See*—
Orosz, Andrew; and Lesarge, Kenneth, 4,335,898, Cl. 280-81.00R.

Leschinsky, Efim Y.: *See*—
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Leutner, Bernd; Schlimper, Hans-Ulrich; Roth, Dieter; Kreitner, Ludwig; and Spahn, Heinrich, to BASF Aktiengesellschaft. Preparation of storage-stable, pumpable and pourable aluminosilicate suspensions by wet milling. 4,336,234, Cl. 423-329.000.

Lever Brothers Company: *See*—
Verrips, Cornelis T.; and van Rhee, Renee, 4,336,272, Cl. 426-250.000.

Levine, Alfred B. Video display pager receiver with memory. 4,336,524, Cl. 340-311.100.

Levine, Michael R. Electronic thermostat with repetitive operation cycle. 4,335,847, Cl. 236-46.00R.

Levolor Lorentzen, Inc.: *See*—
Debs, Victor, 4,335,776, Cl. 160-320.000.

Lew, Yung, to American Hoechst Corp. Imaging system and method with reduced moire interference. 4,336,558, Cl. 358-285.000.

Lewis, Charles E., to McGraw-Edison Company. Voltage sensing apparatus for a voltage regulating transformer. 4,336,490, Cl. 323-305.000.

Lewis, Sheldon N.; and Haggard, Richard A., to Rohm and Haas Company. Composition comprising condensation cross-linkable novel methacrylate polymers. 4,336,345, Cl. 525-107.000.

LGZ Landis & Gyr Zug AG: *See—*
de Vries, Jacob, 4,336,512, Cl. 332-9.00R.
Licitis, Gunars: *See—*
Meyer, Burton C.; Licitis, Gunars; and Brand, Derek A., 4,335,880, Cl. 273-310.000.
Lick, George R. Ceiling tile replacing and positioning apparatus. 4,335,913, Cl. 294-19.00R.
Lieberman, Stuart I.: *See—*
Biehl, Brian L.; and Lieberman, Stuart I., 4,336,532, Cl. 340-600.000.
Lignereux, Jean-Pierre: *See—*
Jacquet, Maurice A.; and Lignereux, Jean-Pierre, 4,335,646, Cl. 98-2.000.
Like, Burton M.; Smialowicz, Dennis; and Brandli, Eugene, to American Cyanamid Company. Disinfectant/cleanser compositions exhibiting reduced eye irritancy potential. 4,336,151, Cl. 252-106.000.
Like, Burton M.; Smialowicz, Dennis; and Brandli, Eugene, to American Cyanamid Company. Disinfectant/cleanser compositions exhibiting reduced eye irritancy potential. 4,336,152, Cl. 252-106.000.
Lindauer Dornier Gesellschaft mbH: *See—*
Strahm, Christian; and Strudel, Werner, 4,335,593, Cl. 68-13.00R.
Lindenbauer, Leo K. Solar energy collector and energy storage cell. 4,335,707, Cl. 126-440.000.
Lindgren, Anders S. G.: *See—*
Arvidsson, Willy B. L.; and Lindgren, Anders S. G., 4,335,784, Cl. 165-9.000.
Lindgren, Leonard C.: *See—*
Ewing, Bruce A.; and Lindgren, Leonard C., 4,335,997, Cl. 416-185.000.
Lindley, Donald C. Rodent trap. 4,335,535, Cl. 43-61.000.
Lindner, Robert A., to Henkel Corporation. Polyvinyl chloride processing. 4,336,176, Cl. 524-310.000.
Lindsay, Winston S., to Vacu-Maid, Inc. Outlet assembly for a vacuum cleaning system. 4,336,427, Cl. 200-61.600.
Linnik, Ivan I.: *See—*
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B., 4,336,498, Cl. 324-230.000.
Lippy Can Company, Ltd.: *See—*
Knize, Elmer J.; and Avers, Daniel C., 4,335,827, Cl. 220-284.000.
Lisco, Richard J., to Bell Telephone Laboratories, Incorporated. Voltage detector. 4,336,467, Cl. 307-350.000.
Liu, Poo-Sung. Electric rotary toothbrush. 4,335,480, Cl. 15-23.000.
Lobmeyer, Raymond J.; and Miller, James A., to Deere & Company. Hydraulic system having variable displacement pumps controlled by power beyond flow. 4,335,577, Cl. 60-421.000.
Locke, Stephen A., to Beloit Corporation. Sonic measurement of web tension. 4,335,603, Cl. 73-159.000.
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Adams, Thomas E.; Murray, Walter D.; and Woolf, Raymond F., 4,336,595, Cl. 364-508.000.
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Johnson, Earl R., 4,335,808, Cl. 192-85.0AB.
Lofgren, Letcher A., to United States of America, Army. Method and apparatus for detonating explosive in response to detonation of remote explosive. 4,335,655, Cl. 102-209.000.
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Long, Donald L. Round table tennis table. 4,335,877, Cl. 273-30.000.
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Giannini, Umberto; Cassata, Antonio; Longi, Paolo; and Mazzocchi, Romano, 4,336,360, Cl. 526-114.000.
Loose, Winfield W., to AMP Incorporated. Solderless circuit board contact. 4,336,431, Cl. 200-292.000.
Lopata, Ira, to Ragen Precision Industries, Inc. Electrostatic display apparatus. 4,335,955, Cl. 355-16.000.
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Paine, John N.; and Lopdrup, Kim A., 4,335,485, Cl. 15-235.800.
Lorant, Ivan; Csernyanszky, Imre; Murlasits, Gyula; Rusznyak, Rezso; and Szabo nee Paulyuk, Paula, to Bor-, Mubor-es Cipoipari Kutato Intezet; and Graboplast Gyori Pamutszovo-es Muborgyar. Process for the production of water vapor-permeable sheet materials. 4,336,300, Cl. 428-316.600.
Lord, Ronald D., to Mining Industry Research Organization of Canada. Lamp assembly with switch and focussing mechanisms. 4,336,579, Cl. 362-272.000.
Lordi, Frank E.; and Triplett, Jacob, to Atlantic Richfield Company. Method of preparing styrene-maleic anhydride molding composition. 4,336,354, Cl. 525-301.000.
Loscher, Helmut: *See—*
Hesse, Peter; Schinle, Friedbert; and Loscher, Helmut, 4,336,329, Cl. 435-3.000.
Love, William D.: *See—*
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Woodhouse, Richard G.; and Salway, Peter H., 4,336,497, Cl. 324-162.000.
Lucas, Jean M.; and Molle, Jean F., to Cemagref. Method and apparatus for the thermal treatment of combustible material. 4,335,664, Cl. 110-346.000.
Lucey, Michael F., to Sprague Electric Company. Humidity- and salt-resistant electronic component. 4,336,311, Cl. 428-521.000.
Lukhvich, Alexandr A.; Rudnitsky, Valery A.; Linnik, Ivan I.; and Gavris, Genrikh B. Magnetic thickness gauge. 4,336,498, Cl. 324-230.000.
Lunn, Gerald K., to Motorola, Inc. Linear full wave rectifier circuit. 4,336,586, Cl. 363-127.000.
Lunn, William H. W.; and Shadle, John K., to Eli Lilly and Company. Cephalosporin antibiotics. 4,336,253, Cl. 424-246.000.
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Luukkala, Mauri, to Vaisala Oy. Apparatus for indicating the freezing of the surface of an asphalt road, paved runway, or the like. 4,335,613, Cl. 73-599.000.
Lynch, Charles E.; and Wilkinson, William K., to Du Pont de Nemours, E. I., and Company. Acrylic precursor fibers suitable for preparing carbon or graphite fibers. 4,336,022, Cl. 8-115.500.
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Edgerton, Milton T.; Granato, Roberto C.; and Lynch, Henry W., 4,335,714, Cl. 128-79.000.
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MacDonald, Kenneth: *See—*
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Machat, Jean-Yves: *See—*
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Machlett Laboratories, Incorporated, The: *See—*
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Mack, John H. Glass cleaning process and apparatus. 4,336,073, Cl. 134-6.000.
Mack Trucks, Inc.: *See—*
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Maeda, Takeo: *See—*
Morinaga, Shigeki; Miyashita, Kunio; Takahashi, Tadashi; Maeda, Takeo; and Yamashita, Seizi, 4,336,475, Cl. 310-198.000.
Maehara, Toshifumi; and Fujita, Tomohiro, to Akebono Brake Industry Company Limited. Double piping type hydraulic pressure control device. 4,335,736, Cl. 137-87.000.
Magid, Sidney H.; and Chung, Wang C. Inflatable throwing toy. 4,335,536, Cl. 46-74.00D.
Magna American Corporation: *See—*
Reaume, Leonard V.; and Hall, James O., 4,335,762, Cl. 144-194.000.
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Mahan, Michael S. Working board for drilling rig. 4,335,792, Cl. 175-52.000.
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Majewicz, Thomas G.; and Podlas, Thomas J., to Hercules Incorporated. Method of thickening heavy brine solutions. 4,336,146, Cl. 252-8.55R.
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Maloney, Kenneth L.; and de Volo, Nick B., to Research Cottrell Technologies, Inc. Apparatus and method for flue gas recirculation in a solid fuel boiler. 4,335,660, Cl. 110-206.000.
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Manning, Monis J., to Polaroid Corporation. Optical element for photographic radiometer. 4,335,959, Cl. 356-218.000.
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Marchand, Charles H., to Cibie Projecteurs. Corrective device for the orientation of a headlight of a motor vehicle. 4,336,571, Cl. 362-60.000.
Marchant, Alan B.: *See—*
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Marconi Company Limited, The: *See—*
Heard, Maurice C., 4,336,606, Cl. 367-117.000.
Radford, Matthew F., 4,336,538, Cl. 343-5.00R.
Marconi, Walter: *See—*
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Margotte, Dieter, to Bayer Aktiengesellschaft. Thermoplastic compositions, process for their preparation and their use. 4,336,348, Cl. 525-146.000.

Maries, Alan; and Shreeve, Francesca M., to International Standard Electric Corporation. Glass composition for water setting ion-polymer cements. 4,336,153, Cl. 252-182.000.

Marinko, Joseph A., to Textron, Inc. Motor control. 4,336,484, Cl. 318-696.000.

Marks, Lawrence M.: *See—*
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Marquardt, Klaus; Eck, Herbert; and Bathelt, Werner, to Wacker-Chemie GmbH. Aqueous dispersions of cross-linkable copolymers based on (meth)acrylates, their preparation and use as stoving enamels. 4,336,172, Cl. 524-555.000.

Marquez, Juan U. Process for the production of a soil improving composition. 4,336,051, Cl. 71-6.000.

Marsden, Dennis, to Pullman Incorporated. Trackside cam centering arrangement. 4,335,988, Cl. 414-387.000.

Marshall, Albert H.; Shaw, Bon F.; Towle, Herbert C.; Riordan, Thomas J.; and Siragusa, George A., to United States of America, Navy. Electro-optic infantry weapons trainer. 4,336,018, Cl. 434-22.000.

Marshall, Duane. Apparatus for underwater image-recording as by sonar-triggered elapsed time strobe photography and the like. 4,335,944, Cl. 354-64.000.

Marshall, Keith: *See—*
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,336,244, Cl. 424-35.000.

Marshall, Stuart E.: *See—*
Cole, Terence G.; and Marshall, Stuart E., 4,336,508, Cl. 331-113.00R.

Marsicano, Matthew F.: *See—*
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Martel, Robert T.: *See—*
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Martin, Willie E., to E-Systems, Inc. Method and apparatus for electronically rotating a heading signal. 4,336,596, Cl. 364-559.000.

Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, to Hoechst Aktiengesellschaft. Mixtures of optical brighteners. 4,336,155, Cl. 252-301.210.

Martuch, Leon L.; and Martuch, Michael L. Method of marking fishing lines. 4,336,087, Cl. 156-85.000.

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Masanova, Natalia N.: *See—*
Vorozhtsov, Georgy N.; Masanova, Natalia N.; Feldbljum, Nikolai B.; Alexeev, Vasily I.; Shigalevsky, Vadim A.; Solomatin, Georgy G.; Shulepova, Olga I.; Khaitun, Galina G.; and Gordeeva, Nadezhda V., 4,336,383, Cl. 546-52.000.

Masi, Lamberto. Winding up sunshade curtain for motor-vehicles. 4,335,773, Cl. 160-23.00R.

Maska, Rudolf: *See—*
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Massie, Lewis E. Door restraining device. 4,335,910, Cl. 292-259.00R.

Masuyama, Kenichi: *See—*
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Masuzawa, Isao; Yamamoto, Kanshi; and Hirokawa, Yoichi, to Tokyo Keiki Co., Ltd. Automatic steering apparatus for ships. 4,336,594, Cl. 364-457.000.

Matsuhashi, Hajime: *See—*
Tanaka, Shigeru; Iwaki, Katsutaro; Matsuhashi, Hajime; and Banzai, Keiichiro, 4,336,487, Cl. 322-99.000.

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Matsumoto, Masafumi; Kotani, Matahira; and Sasaki, Hiromu, to Sharp Kabushiki Kaisha. Pump synchronization in an ink jet system printer. 4,336,547, Cl. 346-75.000.

Matsumoto, Shigeyuki, to Canon Kabushiki Kaisha. Droplets forming device. 4,336,548, Cl. 346-140.00R.

Matsumoto, Sigeru, to Victor Company of Japan, Limited. Pulse-operated mode switching mechanism for tape recorders. 4,336,560, Cl. 360-137.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, to Nippon Shinyaku Company, Ltd. Bis-piperidine compounds. 4,336,373, Cl. 542-447.000.

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Matsuo, Yasushi: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Yokozeki, Seiki, 4,336,433, Cl. 219-10.55B.

Matthews, Billie J., to Kimberly-Clark Corporation. Tampon containing fusible portions. 4,335,721, Cl. 128-285.000.

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Matumoto, Shinji: *See—*
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Matyas, Ivan: *See—*
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Mauro, Charles L.: *See—*
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Mausner, Eberhard; and Brettschneider, Johannes, to Robert Bosch GmbH. Fuel supply system for internal combustion engines. 4,335,694, Cl. 123-478.000.

Max Langenstein Feld- und Gartengerate GmbH & Co.: *See—*
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Dinkelacker, Albrecht, 4,336,074, Cl. 134-8.000.

Maxson, Myron T., to Dow Corning Corporation. Method of producing organosilicon composition with in situ produced cure inhibitor. 4,336,364, Cl. 528-15.000.

Maxwell, Thomas J. Hydraulic flywheel. 4,335,627, Cl. 74-572.000.

Maxwell, Westelle. Balcony greenhouse. 4,335,547, Cl. 52-66.000.

Mayer, Linda J.; and Barbieri, Stephen C., to Hooker Chemicals & Plastics Corp. Electrodeposition of bright copper. 4,336,114, Cl. 204-52.00R.

Mayer, Reinhart: *See—*
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Mayer, Siegfried: *See—*
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Mayhew, Raymond L.; and O'Lenick, Anthony J., Jr., to Mona Industries, Inc. Phosphate imidazolinium compounds. 4,336,385, Cl. 548-112.000.

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O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,336,386, Cl. 548-112.000.

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Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

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McBrayer, Robert D.; and Pujari, Vimal K., to Corning Glass Works. Method for improving thermal shock resistance of honeycombed structures formed from joined cellular segments. 4,335,783, Cl. 165-8.000.

McBurnett, James R.; and Eley, James M., to Tyrone Hydraulics, Inc. Gear pumps and motors. 4,336,005, Cl. 418-126.000.

McClain, Dorothee M., to National Distillers & Chemical Corp. Process for the preparation of finely divided thermoplastic resin. 4,336,210, Cl. 264-8.000.

McClanahan, Edwin D.: *See—*
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McCleary, David R.; and Slivar, Djuro, to Superior Rubber Industries Ltd. Balloon dryer. 4,335,525, Cl. 34-4.000.

McCloskey, Albert R., to Incom International Inc. Wear resistant bearing. 4,335,924, Cl. 308-72.000.

McClure, David E.: *See—*
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McColl, James R.: *See—*
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McCoy, John J.: *See—*
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McCulley, Lowell D., Jr.: *See—*
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Lewis, Charles E., 4,336,490, Cl. 323-305.000.
McLean, Kerry L. Internal combustion engine dual fuel system. 4,335,697, Cl. 123-527.000.
McManus, Gerald P. M. Foldable container. 4,335,769, Cl. 150-1.000.
McPherson, William E. Pacemaker assembly having ventricular inhibited and ventricular triggered pacemaker units. 4,335,727, Cl. 128-419.0PG.
Mead Corporation, The: *See—*
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Mechanical Technology Incorporated: *See—*
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Medwin, Lawrence B., to RCA Corporation. CMOS Device with silicided sources and drains and method. 4,336,550, Cl. 357-42.000.
Megna, Salvatore. Hair curling iron. 4,335,732, Cl. 132-123.000.
Meier, Max. Coated boards of wooden material in particular for use in furniture. 4,336,294, Cl. 428-192.000.
Melanson, Paul C.: *See—*
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Meldahl, Kenneth R.: *See—*
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Melford Engineering Limited: *See—*
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Mellon, Regis B., to Akzona Incorporated. Toll restrictor. 4,336,422, Cl. 179-18.0DA.
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Melse, Jan L.: *See—*
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Cragoe, Edward J., Jr.; Patchett, Arthur A.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,336,397, Cl. 560-51.000.
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Merger, Franz; and Fouquet, Gerd, to BASF Aktiengesellschaft. Preparation of methyl methacrylate by reaction of methyl propionate and methanol. 4,336,403, Cl. 560-211.000.
Merlini, Marjorie A. Newspaper holder. 4,335,864, Cl. 248-316.00D.
Merrell Dow Pharmaceuticals Inc.: *See—*
Sjoerdsma, Albert, 4,336,054, Cl. 71-67.000.
Merrell, Richard G.: *See—*
den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; and Merrell, Richard G., 4,336,553, Cl. 358-120.000.
Merrick, George J.: *See—*
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Messick, Virginia B., to Dow Chemical Company, The. Nitric acid stabilized thermosettable resins. 4,336,359, Cl. 525-531.000.
Metzger, Wesley A. Apparatus and process for drying and curing coated substrates. 4,336,279, Cl. 427-55.000.
Meyer, Burton C.; Licitis, Gunars; and Brand, Derek A., to Marvin Glass & Associates. Electric eye actuated gun arcade. 4,335,880, Cl. 273-310.000.
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Meyer, Gene L.: *See—*
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Michalak, Janusz K. Apparatus and method for measuring fluid. 4,335,606, Cl. 73-298.000.
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Miller, A. Leslie, to Koppers Company, Inc. Iron blast furnace casting cage. 4,335,869, Cl. 266-158.000.
Miller, Casper W.: *See—*
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Miller, Franklyn D.: *See—*
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Miller, J. Wayne; and Ward, John W., to Union Oil Company of California. Desulfurization of hydrocarbons. 4,336,130, Cl. 208-243.000.
Miller, James A.: *See—*
Lobmeyer, Raymond J.; and Miller, James A., 4,335,577, Cl. 60-421.000.
Miller, Matthew S., to General Electric Company. Microwave oven cavity excitation system employing circularly polarized beam steering for uniformity of energy distribution and improved impedance matching. 4,336,434, Cl. 219-10.55F.
Miller, Wayne J.: *See—*
Downs, Raymond L.; and Miller, Wayne J., 4,336,338, Cl. 501-12.000.
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Irwin, Lawrence F.; and Millray, Robert, 4,335,632, Cl. 81-446.000.
Mills, Leland F., to Crathern Engineering Co., Inc. System for and method of laminating. 4,336,094, Cl. 156-299.000.
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Onishi, Isatsugu; Furuoya, Itsuo; and Minato, Ichiro, 4,336,205, Cl. 260-465.00C.
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., to Sterling Drug Inc. 3-(Hydroxy or hydroxymethyl)-4-hydroxy-alpha(aminomethyl)benzyl alcohols and methods of use. 4,336,400, Cl. 560-73.000.
Minear, Gerald: *See—*
Mueller, Max A.; Vandertoolen, Dirk; and Minear, Gerald, 4,336,139, Cl. 210-401.000.
Mining Industry Research Organization of Canada: *See—*
Lord, Ronald D., 4,336,579, Cl. 362-272.000.
Ministry of International Trade & Industry: *See—*
Fukuta, Kenji; Onooka, Ryuzo; Aoki, Eiji; and Tsumuraya, Shigeo, 4,336,296, Cl. 428-257.000.
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Eiden, Ronald R., 4,336,293, Cl. 428-143.000.
Van Kampen, Craig L.; and Ahlberg, Carl S., 4,336,097, Cl. 156-527.000.
Winslow, John M., 4,336,323, Cl. 430-339.000.
Misdom, Theodore H.: *See—*
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Misuta, Hiroshi: *See—*
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Mitchell, Arthur W. Chimney cowls. 4,335,648, Cl. 98-59.000.
Mitchell, Colin H.; and Young, Michael J., to Nuclear Power Company Limited. Tube-in-shell heat exchangers. 4,336,614, Cl. 376-405.000.
Mitchell, Gary A.: *See—*
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,336,186, Cl. 260-112.50R.
Mitchell, James T., to Westinghouse Electric Corp. Packaged solid state power controller with separable mounting for a power switching device, and method of assembly. 4,336,568, Cl. 361-386.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Inoue, Toru; Sugiyama, Yasuo; and Onishi, Ken, 4,336,612, Cl. 371-39.000.
Kobayashi, Hiroo, 4,336,480, Cl. 313-495.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Isshiki, Tomiya; Kijima, Yasuhiko; and Miyauchi, Yuh, 4,336,399, Cl. 560-61.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Akiyama, Seiji; Kurihara, Mamoru; and Ueki, Kazuhiko, 4,335,981, Cl. 405-221.000.
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Kanada, Eiji; Tsubai, Yasuo; Yamada, Shoji; Takaya, Yoshikazu; and Senga, Takao, 4,336,321, Cl. 430-234.000.
Mitsumoto, Takashi; and Nakashima, Hiroshi, to Aisin Seiki Kabushiki Kaisha; and Japanese National Railways. Connecting device for conduits. 4,335,747, Cl. 137-614.060.
Miura, Nobuo, to Honda Giken Kogyo Kabushiki Kaisha. Spark ignition timing control system for internal combustion engines. 4,335,692, Cl. 123-418.000.
Miyahara, Akimitsu; Kanazawa, Toshihiko; Takahashi, Kokaji; Ushikubo, Hiroji; and Kawano, Kuniaki, to Japan Organo Company, Ltd. Liquid storage tank. 4,335,746, Cl. 137-576.000.
Miyamori, Masashige, to Murata Manufacturing Co., Ltd. Oscillator with a feedback circuit employing a pre-polarized ceramic piezoelectric oscillating unit. 4,336,510, Cl. 331-163.000.

Miyamoto, Chikara: *See—*
Fujiwara, Mitsuhiko; Fujiwara, Akiko; and Miyamoto, Chikara, 4,336,332, Cl. 435-58.000.
Miyamoto, Tomohiko: *See—*
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Mizuno, Hiroshi: *See—*
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Mobil Oil Corporation: *See—*
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Molders, Werner, to Stabilus GmbH. Pressurized fluid device. 4,335,871, Cl. 267-64.280.
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Molloy, Bryan B.; and Steinberg, Mitchell I., to Eli Lilly and Company. Para-nitrophenylalkylamines. 4,336,269, Cl. 424-330.000.
Mona Industries, Inc.: *See—*
Mayhew, Raymond L.; and O'Lenick, Anthony J., Jr., 4,336,385, Cl. 548-112.000.
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,336,386, Cl. 548-112.000.
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Howe, Robert K.; and Lee, Len F., 4,336,389, Cl. 548-201.000.
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Montecatini Edison S.p.A.: *See—*
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Montedison S.p.A.: *See—*
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Montgomery, Gary V.; and Bush, Randall G., to Sunbeam Plastics Corporation. Child-resistant package. 4,335,823, Cl. 215-206.000.
Moore, Jimmie L.: *See—*
Payne, Alan J.; Aylott, Michael V.; Moore, Jimmie L.; and Yokley, Edward M., 4,336,260, Cl. 424-266.000.
Moore, Ronnie J.; and Brown, Michael D., to Moore, Ronnie James. Method for removing vinyl decals. 4,336,072, Cl. 134-4.000.
Moore, Ronnie James: *See—*
Moore, Ronnie J.; and Brown, Michael D., 4,336,072, Cl. 134-4.000.
Mordike, Barry L.: *See—*
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Morianz, Josef V., to Swiss Aluminium Ltd. Device for continuous horizontal casting. 4,335,779, Cl. 164-440.000.
Moriarty, Robert M.; Walton, John W.; and Caldwell, Samuel C., to United Technologies Corporation. Selective commutation for an inverter. 4,336,585, Cl. 363-79.000.
Morinaga, Shigeki; Miyashita, Kunio; Takahashi, Tadashi; Maeda, Takeo; and Yamashita, Seizi, to Hitachi, Ltd. Slotless brushless motor. 4,336,475, Cl. 310-198.000.
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Moritz, George J. Production of purified brine. 4,336,232, Cl. 423-164.000.
Morlec, Emile; Reynes, Daniel; and Suzzoni, Jean-Pierre, to International Business Machines Corp. Device for increasing the parallel inductance of a transformer. 4,336,423, Cl. 179-18.0GF.
Morris, Albert W., Jr. Follow spot sighting device. 4,336,581, Cl. 362-457.000.
Morris, David R.; and Erickson, Porter W., to United States of America, Navy. Epoxy adhesive composition. 4,336,367, Cl. 524-770.000.
Morrison, Donald R. Winch apparatus for vibrating concrete screed. 4,335,976, Cl. 404-114.000.
Morrissey, Neal J.: *See—*
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Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Gray, Joseph E., 4,336,199, Cl. 549-496.000.
Morton, Virgil R., to Verco Manufacturing, Inc. Shear load resistant structure. 4,335,557, Cl. 52-741.000.
Moseley, Fred; and Dyer, Paul N., to Air Products and Chemicals, Inc. Method of manufacturing hydrogen peroxide. 4,336,240, Cl. 423-584.000.
Moss, Ronald W.: *See—*
Patten, James W.; Moss, Ronald W.; and McClanahan, Edwin D., 4,336,118, Cl. 204-192.0EC.
Motomura, Noriyuki; and Tsuboi, Hiroyuki, to Toshiba Kikai Kabushiki Kaisha. Apparatus for measuring injection speeds of die casting machines. 4,335,778, Cl. 164-150.000.
Motonami, Masanao; and Ishikawa, Yoshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Passive seatbelt driving mechanism. 4,335,902, Cl. 280-804.000.
Motorola, Inc.: *See—*
Attwood, Stanley W., 4,336,500, Cl. 329-50.000.
Bynum, Byron G.; and Jarrett, Robert B., 4,336,507, Cl. 331-108.00D.
Duffy, Victor P., 4,335,781, Cl. 165-1.000.
Lunn, Gerald K., 4,336,586, Cl. 363-127.000.
Whatley, Roger A., 4,336,503, Cl. 330-253.000.
Mount, Fred L.: *See—*
Jameson, James J.; Mount, Fred L.; and Fernandez, Joe L., 4,335,963, Cl. 366-63.000.
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., to General Instrument Corporation. Alpha-numeric display array and method of manufacture. 4,336,580, Cl. 362-347.000.
Moyroud, Louis M.; and Morgan, Grant T., to Autologic, S.A. Photocomposing machine. 4,335,941, Cl. 354-15.000.
Muckenhuber, Maximilian: *See—*
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Mudgett, Walter A. Single note sostenuto for the upright piano. 4,335,640, Cl. 84-218.000.
Mueller, Max A.; Vandertoolen, Dirk; and Minear, Gerald, to Envirotech Corporation. Vacuum pan raising and lowering system. 4,336,139, Cl. 210-401.000.
Mueller, Richard A., to G. D. Searle & Co. 1-Cycloalkyl phosphonium salts. 4,336,252, Cl. 424-198.000.
Muhlke, John, III: *See—*
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., 4,336,493, Cl. 324-61.00R.
Muller, Alfred, to Siemens Aktiengesellschaft. Method for continuous production of niobium-germanium layers on a substrate. 4,336,280, Cl. 427-62.000.
Muller, Anton; Rauscher, Martin; and Witzel, Gunter, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Tensioning device, especially for lashing chains. 4,335,489, Cl. 24-68.0CT.
Muller, Henry J., Jr. Garden cart with removable container. 4,335,897, Cl. 280-47.180.
Muller, Jean-Claude; and Ramuz, Henri, to Hoffmann-La Roche Inc. Oxadiazolotriazine derivatives. 4,336,380, Cl. 544-198.000.
Muller, Karl-Heinz: *See—*
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Muller, Tore B. Process for continuous crystallization. 4,336,030, Cl. 23-301.000.
Muller, Werner C.; and Miller, Franklyn D., to National Distillers & Chemical Corp. Fermentation process. 4,336,335, Cl. 435-161.000.
Mundnich, Rainer; Finke, Manfred; Rupp, Walter; and Dehmer, Klaus, to Hoechst Aktiengesellschaft. Process for the manufacture of cyanohydrin acylates of aldehydes. 4,336,206, Cl. 260-465.400.
Munekata, Kenichi; Ohkoshi, Fumihiko; Kamiya, Yoji; and Hasegawa, Toshifumi, to Toyoda Koki Kabushiki Kaisha. Tool storage magazine for machine tool. 4,335,500, Cl. 29-568.000.
Muntwyler, Rene, to Ciba-Geigy Corporation. O-benzylphenols. 4,336,270, Cl. 424-347.000.
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Murata Manufacturing Co., Ltd.: *See—*
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Murphey, Joseph R.; and Young, Bill M., to Halliburton Company. Acid dissolvable cements and methods of using the same. 4,335,788, Cl. 166-278.000.
Murphy, John H., to Westinghouse Electric Corp. Superconducting transformer. 4,336,561, Cl. 361-19.000.

Murphy, Rholand D. Portable multi-purpose construction table. 4,335,765, Cl. 144-286.00R.
Murray, Hugh; and Marks, Lawrence M., to Xerox Corporation. Charge process with a carbon fiber brush electrode. 4,336,565, Cl. 361-225.000.
Murray, Walter D.: *See—*
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Mutch, Robert D. Induced intragradient system for secure landfill. 4,335,978, Cl. 405-129.000.
Naarmann, Herbert: *See—*
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Brand, Leonard J.; and Nadelson, Jeffrey, 4,336,379, Cl. 544-137.000.
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Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, to Nitto Boseki Co., Ltd.; and Iatron Laboratories, Inc. Method for assaying the activity of γ-glutamyl transpeptidase in serum. 4,336,331, Cl. 435-24.000.
Nagashima, Akira; and Kita, Nobuyuki, to Fuji Photo Film Co., Ltd. Light-solubilizable composition. 4,336,319, Cl. 430-165.000.
Nagashima, Hideyuki; and Kamijo, Ken, to Nissan Motor Co., Ltd. Seat reclining device. 4,335,919, Cl. 297-362.000.
Nagata, Koji; Ogiso, Akio; and Sudo, Kyuji, to Sumitomo Light Metal Industries, Ltd. Coating of the inner surface of tubes. 4,335,677, Cl. 118-306.000.
Nagata, Wataru; and Kamata, Susumu, to Shionogi & Co., Ltd. 5-Fluorouracil derivatives. 4,336,381, Cl. 544-313.000.
Nagel, Arthur A., to Pfizer Inc. 4 Deoxy-4-methylene oleandomycin and derivatives thereof. 4,336,368, Cl. 536-7.200.
Nail, James A., to Chicago Bridge & Iron Company. Falling film freeze exchanger. 4,335,581, Cl. 62-123.000.
Najer, Henry: *See—*
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Nakahara, Yutaka; Shibata, Toshihiro; and Kubota, Naohiro, to Adeka Argus Chemical Co., Ltd. 2,2,6,6-Tetramethyl-4-piperidyl carboxylic acid esters and amides of mono and poly alcohols, phenols and amines as stabilizers for synthetic polymers. 4,336,183, Cl. 524-95.000.
Nakajima, Mutsuo: *See—*
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Nakane, Hisashi: *See—*
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Nakano, Masao; Takemae, Yoshihiro; and Kabashima, Katsuhiko, to Fujitsu Limited. Reset circuit. 4,336,465, Cl. 307-238.300.
Nakaoka, Kazuhide; Nishimoto, Akihiko; and Hosoya, Yoshihiro, to Nippon Kokan Kabushiki Kaisha. Method for manufacturing high-strength cold-rolled steel strip excellent in press-formability. 4,336,080, Cl. 148-12.00C.
Nakashima, Hiroshi: *See—*
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Nasser, Karim W. Fluid level controller. 4,335,741, Cl. 137-426.000.
Nassir, Nicholas. Butterfly valve. 4,335,738, Cl. 137-246.220.
Natale, Peter J., to Ortho Diagnostic Systems Inc. Method and reagents for quantitative determination of reticulocytes and platelets in whole blood. 4,336,029, Cl. 23-230.00B.
Nath, Prem: *See—*
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National Can Corporation: *See—*
George, Robert W.; Miller, Casper W.; and Rapey, Kenneth, 4,336,011, Cl. 425-129.00R.
National Distillers & Chemical Corp.: *See—*
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National Semiconductor Corporation: *See—*
Frederiksen, Thomas M., 4,336,489, Cl. 323-231.000.
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Nausedas, Joseph A., to Union Carbide Corporation. Dual pressure closure clipping system for chamber evacuator. 4,335,559, Cl. 53-138.00A.
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NCR Corporation: *See—*
Albertine, Herman, Jr., 4,336,535, Cl. 340-768.000.
Nelson, Stephen J., to Upjohn Company, The. Phosphorus derivatives of aminothiocarbamoyl halides. 4,336,207, Cl. 260-936.000.
Nepute, Carl: *See—*
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Neturen Company, Ltd.: *See—*
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Newell, Chester W.: *See—*
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Newell Research Corporation: *See—*
Pfost, R. Fred; Seaman, William E.; and Newell, Chester W., 4,335,857, Cl. 242-192.000.
NGK Spark Plug Co., Ltd.: *See—*
Tanaka, Hiroshi, 4,336,305, Cl. 428-336.000.
Watanabe, Masakazu; Okuno, Akiyasu; and Matsuo, Yasushi, 4,336,216, Cl. 264-65.000.
Yamada, Shigeyasu, 4,336,477, Cl. 313-142.000.
Nicholson, Charles E. Adjustable support device to secure a patch in hollow walls. 4,335,554, Cl. 52-514.000.
Nicholson, Terence P. Gasket for cylinder head. 4,335,890, Cl. 277-235.00B.
Niederer, Lee H.; and Niederer, Thomas O., to Otto Niederer Sons, Inc. Egg arranging apparatus. 4,335,811, Cl. 198-446.000.
Niederer, Thomas O.: *See—*
Niederer, Lee H.; and Niederer, Thomas O., 4,335,811, Cl. 198-446.000.
Nieminen, Timo, to Syntex (U.S.A.) Inc. Motion mechanism of X-ray film in panoramic radiography. 4,336,457, Cl. 250-439.00P.
Nihon Sanmo Dyeing Co., Ltd.: *See—*
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,336,028, Cl. 8-624.000.
Nippon Columbia Kabushiki Kaisha: *See—*
Ishikawa, Kazumasa; Takahashi, Shin-ichi; and Yoneyama, Masahide, 4,336,501, Cl. 330-109.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Okamoto, Eisaku, 4,335,639, Cl. 84-1.010.
Sata, Takeo; Takamura, Masayuki; Iijima, Kenzaburo; and Fukuda, Norio, 4,336,066, Cl. 75-211.000.
Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Pillar Packing Co. Ltd.: *See—*
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Nippon Shinyaku Company, Ltd.: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,373, Cl. 542-447.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,374, Cl. 542-469.000.
Nippon Soda Company Limited: *See—*
Kitamura, Shigeo; Yoshioka, Kazuo; Seriyama, Yoshiharu; and Misuta, Hiroshi, 4,336,196, Cl. 549-416.000.
Nippon Soken, Inc.: *See—*
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Takeda, Kenji; Hattori, Yoshiyuki; and Kasagi, Takao, 4,336,007, Cl. 418-183.000.
Nippon Steel Chemical Co., Ltd.: *See—*
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Nippon Telegraph and Telephone Public Corp.: *See—*
Okubo, Tsuneo; Kato, Yasuo; and Matsuoka, Genya, 4,336,597, Cl. 364-560.000.
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,336,049, Cl. 65-3.120.
Nippon Zeon Co. Ltd.: *See—*
Yamamoto, Haruhisa; and Matumoto, Shinji, 4,336,409, Cl. 585-622.000.
Nippondenso Co., Ltd.: *See—*
Hosokawa, Hiroyuki; and Maeda, Shiro, 4,335,690, Cl. 123-407.000.
Tanaka, Shigeru; Iwaki, Katsutaro; Matsuhashi, Hajime; and Banzai, Keiichiro, 4,336,487, Cl. 322-99.000.
Nishida, Takashi: *See—*
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,336,202, Cl. 549-466.000.
Nishikawa, Masumi, to Aisin Seiki Kabushiki Kaisha. Tiltable steering shaft mechanism for automobiles. 4,335,625, Cl. 74-493.000.
Nishikawa, Yutaka: *See—*
Godai, Tomokazu; Sugiyama, Tohru; and Nishikawa, Yutaka, 4,336,441, Cl. 219-137.0WM.
Nishimiya, Toru, to Tomy Kogyo Co., Inc. Game having reciprocally moving interference members. 4,335,878, Cl. 273-119.00R.
Nishimoto, Akihiko: *See—*
Nakaoka, Kazuhide; Nishimoto, Akihiko; and Hosoya, Yoshihiro, 4,336,080, Cl. 148-12.00C.

Nishimura, Yoshitugu; and Kotera, Noboru, to Kasei Optonix, Ltd. Phosphor and radiation image storage panel utilizing the same. 4,336,154, Cl. 252-301.40H.
Nissan Motor Co., Ltd.: *See—*
Konishi, Hideki, 4,335,691, Cl. 123-410.000.
Nagashima, Hideyuki; and Kamijo, Ken, 4,335,919, Cl. 297-362.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,335,687, Cl. 123-198.00F.
Takase, Sadao, 4,336,593, Cl. 364-431.000.
Takata, Yasunobu, 4,336,572, Cl. 362-66.000.
Niswender, Gordon D., to Rohm and Haas Company. Folic acid derivatives. 4,336,185, Cl. 260-112.00R.
Nitadori, Yoshiaki: *See—*
Tsuruta, Teiji; and Nitadori, Yoshiaki, 4,336,361, Cl. 526-180.000.
Nitto Boseki Co., Ltd.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,336,331, Cl. 435-24.000.
NL Industries, Inc.: *See—*
Kolakowski, Michael A.; and Valachovic, John J., 4,336,236, Cl. 423-435.000.
Saliger, Kenneth C.; and Jansen, Martin B., 4,335,904, Cl. 285-18.000.
Noddings, John; and Borton, Roland K., to Associated Engineering Limited. Vehicle speed control systems. 4,336,566, Cl. 361-242.000.
Nogaj, Alfred: *See—*
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, 4,336,214, Cl. 264-49.000.
Noguchi, Takanobu: *See—*
Sagoh, Masakazu; Noguchi, Takanobu; and Yasui, Seimei, 4,336,347, Cl. 525-139.000.
Nolan, Thomas A., Jr.: *See—*
Gregory, William D.; Capots, Larry H.; Morelli, Luigi; Muhlke, John, III; and Nolan, Thomas A., Jr., 4,336,493, Cl. 324-61.00R.
Nomura, Hirokazu: *See—*
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,336,211, Cl. 264-22.000.
Nonaka, Kohei; Koyama, Masahiro; Gonmori, Makoto; Kimura, Takeo; and Shiga, Tetsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Image forming method and apparatus therefor. 4,335,957, Cl. 355-30.000.
Nonomura, Keisaku; Uede, Hisashi; Wada, Tomio; and Takamatsu, Toshiaki, to Sharp Kabushiki Kaisha. Matrix electrode structure in a multi-layer matrix type liquid crystal display. 4,335,936, Cl. 350-335.000.
Nonomura, Keisaku: *See—*
Takamatsu, Toshiaki; Shimizu, Keiichiro; Wada, Tomio; and Nonomura, Keisaku, 4,335,937, Cl. 350-336.000.
Nord, Paul J.: *See—*
Frank, Clyde W.; Nord, Paul J.; and Cox, Robert D., 4,336,158, Cl. 252-408.000.
Nordson Corporation: *See—*
Hastings, Donald R., 4,335,851, Cl. 239-3.000.
Northrup, John D., Jr.: *See—*
Northup, John D., 4,336,050, Cl. 65-82.000.
Northup, John D., to Northrup, John D., Jr.; Northup, Ruth; Lehrkind, Nancy Northup; and Northup, Mary. Method for manufacturing glass bottles. 4,336,050, Cl. 65-82.000.
Northup, Mary: *See—*
Northup, John D., 4,336,050, Cl. 65-82.000.
Northup, Ruth: *See—*
Northup, John D., 4,336,050, Cl. 65-82.000.
Novatome: *See—*
Le Roux, Jean; and Plagnard, Andre, 4,335,883, Cl. 277-3.000.
Noviello, Nicholas, Jr., executor: *See—*
Dierks, Raymond W., deceased; Noviello, Nicholas, Jr., executor; and Glass, Seymour, executor, 4,335,845, Cl. 229-69.000.
Nowak, Andrew, to Fluid-Air Components, Inc. Hydraulic-positioning system for high-impact applications. 4,335,993, Cl. 414-748.000.
Nuclear Assurance Corp.: *See—*
Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., 4,336,460, Cl. 250-506.000.
Nuclear Power Company Limited: *See—*
Mitchell, Colin H.; and Young, Michael J., 4,336,614, Cl. 376-405.000.
Numata, Saburo. Color compensating device for a camera. 4,335,943, Cl. 354-60.00R.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Method of and apparatus for automatic electronic flash lamp control. 4,336,481, Cl. 315-241.00P.
Nye Engineering, Incorporated: *See—*
Schorre, Kenneth R.; Nye, James O.; Dixon, Dennie W.; and Nepute, Carl, 4,336,046, Cl. 62-28.000.
Nye, James O.: *See—*
Schorre, Kenneth R.; Nye, James O.; Dixon, Dennie W.; and Nepute, Carl, 4,336,046, Cl. 62-28.000.
Nygaard, Kurt: *See—*
Bratt, Sven-Erik; Nygaard, Kurt; and Nygards, Olof, 4,335,653, Cl. 102-202.800.
Nygards, Olof: *See—*
Bratt, Sven-Erik; Nygaard, Kurt; and Nygards, Olof, 4,335,653, Cl. 102-202.800.
Oak Industries: *See—*
den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; and Merrell, Richard G., 4,336,553, Cl. 358-120.000.
O'Connor, Robert T.: *See—*
Hayes, Stanley B., Jr.; and O'Connor, Robert T., 4,335,597, Cl. 73-17.00A.
Odermann, Charles R., to Singer Company, The. Pattern controlled sewing machine for producing tailor tacks. 4,335,668, Cl. 112-158.00E.
Officine Savio S.p.A.: *See—*
Courvoisier, Guy, 4,335,859, Cl. 242-35.50A.
Ogasawara, Akira: *See—*
Utagawa, Ken; Ogasawara, Akira; Shirasu, Hiroshi; and Hoshino, Kunihisa, 4,336,450, Cl. 250-201.000.
Ogiso, Akio: *See—*
Nagata, Koji; Ogiso, ▲kio; and Sudo, Kyuji, 4,335,677, Cl. 118-306.000.
Oguchi, Yuzo; Itakura, Takayuki; and Kawano, Akio, to Osaka Gas Co., Ltd. Converter for meter-gauge readings. 4,336,447, Cl. 235-92.0EA.
Ohba, Hisao: *See—*
Kohayakawa, Ken; Ohba, Hisao; and Sano, Atuhiro, 4,336,093, Cl. 29-399.000.
Ohba, Kanji; and Itoi, Shigenari, to Nippon Pillar Packing Co. Ltd. Mechanical seal. 4,335,888, Cl. 277-96.100.
Ohkoshi, Fumihiko: *See—*
Munekata, Kenichi; Ohkoshi, Fumihiko; Kamiya, Yoji; and Hasegawa, Toshifumi, 4,335,500, Cl. 29-568.000.
Ohno, Hiroshi: *See—*
Kodama, Churyo; Hirota, Taisuke; Ohno, Hiroshi; and Urataki, Etsuo, 4,336,479, Cl. 313-487.000.
Ohno, Yoshikatsu: *See—*
Tsuda, Tatsuya; and Ohno, Yoshikatsu, 4,336,569, Cl. 361-395.000.
Ohsumi, Tadashi; Itaya, Nobushige; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Benzyl pyrrolyl methyl carboxylate insecticides and acaricides. 4,336,194, Cl. 548-562.000.
Okabe, Moisei: *See—*
Kanamaru, Hisanobu; Tohkairin, Akira; Tatsumi, Hideo; and Okabe, Moisei, 4,335,496, Cl. 29-520.000.
Okada, Masataka; and Shiun, Toshimi, to Clarion Co., Ltd. Code signal blanking apparatus. 4,336,554, Cl. 358-124.000.
Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Preferential circuit for electronic musical instrument. 4,335,639, Cl. 84-1.010.
Okamura, Kiyohito: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,336,215, Cl. 264-63.000.
Okazaki, Hiroshi: *See—*
Yoshimura, Tokuo; Okazaki, Hiroshi; Soeda, Mahito; and Yushima, Takeharu, 4,336,129, Cl. 208-180.000.
Okimoto, Tomoyuki: *See—*
Horiike, Tetsuro; Okimoto, Tomoyuki; and Shiozaki, Tomoharu, 4,336,170, Cl. 521-55.000.
Okubo, Tsuneo; Kato, Yasuo; and Matsuoka, Genya, to Nippon Telegraph and Telephone Public Corp.; and Hitachi, Ltd. Method and system for measuring the diameter of an electron beam. 4,336,597, Cl. 364-560.000.
Okumiya, Masataro; and Kuwabara, Kiyoharu, to Asahi Glass Company Ltd. High zirconia fused refractory product. 4,336,339, Cl. 501-103.000.
Okuno, Akiyasu: *See—*
Watanabe, Masakazu; Okuno, Akiyasu; and Matsuo, Yasushi, 4,336,216, Cl. 264-65.000.
Okuyama, Kiyotaka; Hosaka, Akihiko; and Isobe, Yukihiro, to TDK Electronics Co., Ltd. Magnetic recording medium and preparation thereof. 4,336,310, Cl. 428-447.000.
Olansen, Ronald A.; and Pavelski, Linda, to Posi-Seal International, Inc. Bidirectional control valve. 4,335,748, Cl. 137-614.110.
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., to Mona Industries, Inc. Quaternary imidazolinium phosphite derivatives. 4,336,386, Cl. 548-112.000.
O'Lenick, Anthony J., Jr.: *See—*
Mayhew, Raymond L.; and O'Lenick, Anthony J., Jr., 4,336,385, Cl. 548-112.000.
Olin Corporation: *See—*
Urs, Venkataramaraj S., 4,336,084, Cl. 149-24.000.
Oliva, Ambro; and Joly, Luc. Process and device for measuring the flow rate of a fluid. 4,335,616, Cl. 73-861.050.
Olson, Edward A. Method and device for supplying venous pressure in a portal vein. 4,335,711, Cl. 128-1.00R.
Olympus Optical Co., Ltd.: *See—*
Komiya, Osamu, 4,335,713, Cl. 128-9.000.
Omnitronics Research Corporation: *See—*
Williamson, John D., 4,335,710, Cl. 128-1.00C.
Onishi, Isatsugu; Furuoya, Itsuo; and Minato, Ichiro, to Takeda Chemical Industries, Ltd. Method for producing aromatic nitriles. 4,336,205, Cl. 260-465.00C.
Onishi, Ken: *See—*
Inoue, Toru; Sugiyama, Yasuo; and Onishi, Ken, 4,336,612, Cl. 371-39.000.
Onishi, Takashi: *See—*
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, 4,336,202, Cl. 549-466.000.
Onooka, Ryuzo: *See—*
Fukuta, Kenji; Onooka, Ryuzo; Aoki, Eiji; and Tsumuraya, Shigeo, 4,336,296, Cl. 428-257.000.

Onuchukwu, Anthony I.: *See—*
Tseung, Alfred C. C.; Onuchukwu, Anthony I.; and Chan, Ho C., 4,335,754, Cl. 138-146.000.

Opitz, Konrad: *See—*
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,336,025, Cl. 8-527.000.

Oriel Corporation: *See—*
Edelstein, Arthur, 4,335,516, Cl. 33-164.00R.

Orion Machinery Company Limited: *See—*
Aonuma, Masaru; and Nanaumi, Kazuyuki, 4,336,043, Cl. 55-483.000.

Orlowski, Ronald C.; Groginsky, Charles M.; and Seyler, Jay K., to Armour Pharmaceutical Company. Purification of calcitonin by partition chromatography. 4,336,187, Cl. 260-112.50T.

Orosz, Andrew; and Lesarge, Kenneth, to Westank-Willock, a Division of Willock Industries Ltd. Load shifter assembly for trailers. 4,335,898, Cl. 280-81.00R.

Orsborn, Jesse H.: *See—*
Swanson, William C.; and Orsborn, Jesse H., 4,335,561, Cl. 56-10.200.

Ortho Diagnostic Systems Inc.: *See—*
Natale, Peter J., 4,336,029, Cl. 23-230.00B.

Osaka Gas Co., Ltd.: *See—*
Oguchi, Yuzo; Itakura, Takayuki; and Kawano, Akio, 4,336,447, Cl. 235-92.0EA.

Osborn, Douglas B.; and Pons, Robert L., to Ford Aerospace & Communications Corporation. Solar power converter with pool boiling receiver and integral heat exchanger. 4,335,578, Cl. 60-641.800.

Osegowitsch, Viktor: *See—*
Findeis, Gunter; Fergg, Berthold; Osegowitsch, Viktor; Huber, Hans P.; and Meckl, Heinz, 4,335,956, Cl. 355-27.000.

Oskam, Herman: *See—*
Frentzel, Kurt H.; and Oskam, Herman, 4,335,775, Cl. 160-177.000.

Oster, Winton: *See—*
Close, Albert R.; and Oster, Winton, 4,335,510, Cl. 30-276.000.

Osthaus, Georg: *See—*
Zucker, Friedrich J.; Osthaus, Georg; and Plassmann, Paul, 4,336,203, Cl. 260-417.000.

Ott, Hubert, to Mannesmann Aktiengesellschaft. Print head. 4,335,969, Cl. 400-124.000.

Otto Niederer Sons, Inc.: *See—*
Niederer, Lee H.; and Niederer, Thomas O., 4,335,811, Cl. 198-446.000.

Overy, Colin; and Dynie, Ernest R., to Black & Decker Inc. Switch-brake interlock for chain saw. 4,335,514, Cl. 30-382.000.

Owens, Clark McG., to Combustion Engineering, Inc. Stabilization of carbon in austenitic alloy tubing. 4,336,079, Cl. 148-11.50N.

Owens-Corning Fiberglas Corporation: *See—*
Swaney, William A., 4,335,831, Cl. 220-901.000.

Owens, James L. Safety bar for use with chain saw or the like. 4,335,513, Cl. 30-382.000.

Oxenberg, Sheldon C.: *See—*
Welch, John R.; and Oxenberg, Sheldon C., 4,336,421, Cl. 179-1.0SD.

Oy Tampella AB: *See—*
Hamala, Sirpa L.; Koivunen, Seppo T.; Kontturi, Anna-Kaisa; and Sarkkinen, Veli J., 4,336,189, Cl. 260-124.00R.

Ozech, Ingo S.: *See—*
Buck, Robert; and Ozech, Ingo S., 4,336,491, Cl. 323-326.000.

Ozelli, Riza N.: *See—*
Kohlstadt, Hans-Peter; Ozelli, Riza N.; and Gierenz, Gerhard, 4,336,171, Cl. 524-510.000.

Ozols, Gunars M.: *See—*
Chiu, George T.; Joseph, Robert R.; and Ozols, Gunars M., 4,335,506, Cl. 29-591.000.

Paaren, Herbert E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; Wichmann, Joseph K.; and Fivizzani, Mary A., 4,336,193, Cl. 260-239.570.

Pabst, Joanne K.: *See—*
Lang, Robert J.; and Pabst, Joanne K., 4,336,034, Cl. 48-202.000.

Packaging Corporation of America: *See—*
Bessett, Clifford H.; and Misdom, Theodore H., 4,335,813, Cl. 206-45.330.

Pagliuca, Basilio. Exhaust back pressure reducer for internal combustion engine. 4,335,575, Cl. 60-319.000.

Paige, Edward G. S., to National Research Development Corporation. Acoustic wave devices. 4,336,514, Cl. 333-195.000.

Paine, John N.; and Lopdrup, Kim A. Variable pitch trowels. 4,335,485, Cl. 15-235.800.

Pak Pro International N.V.: *See—*
Hautemont, Jean-Claude, 4,335,635, Cl. 83-160.000.

Palmer, John P., to General Dynamics, Pomona Division. Fiber optic wavelength demultiplexer. 4,335,933, Cl. 350-96.190.

Panter, Harrison R.: *See—*
Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., 4,336,460, Cl. 250-506.000.

Pantex-Stahl AG: *See—*
Arnold, Edgar, 4,335,556, Cl. 52-655.000.

Pappa, Rosario: *See—*
Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, 4,336,188, Cl. 260-112.50R.

Parker-Hannifin Corporation: *See—*
Cardinale, Paul J.; and Partelow, Leonard E., Jr., 4,335,906, Cl. 285-22.000.

Parker, Kenneth O., to Garrett Corporation, The. Heat exchanger method. 4,335,782, Cl. 165-1.000.

Parmann, Gunnar, to Rieber & Son A/S. System for mounting a forming element on a mandrel. 4,336,014, Cl. 425-403.000.

Partelow, Leonard E., Jr.: *See—*
Cardinale, Paul J.; and Partelow, Leonard E., Jr., 4,335,906, Cl. 285-22.000.

Pask, James B. Disposable boots. 4,335,527, Cl. 36-7.10R.

Passarelli, Frank J.; Matsukas, George A.; and Caspary, Charles P. Energy collector and transfer apparatus. 4,335,706, Cl. 126-435.000.

Passlick, Theodor, to Kollmorgen Technologies Corporation. Method of production of electrically conductive panels and insulating base materials. 4,336,100, Cl. 156-630.000.

Pastva, John V., Jr.: *See—*
Swan, Jye P.; Pastva, John V., Jr.; and Dignan, Donald J., 4,335,595, Cl. 70-149.000.

Patchett, Arthur A.: *See—*
Cragoe, Edward J., Jr.; Patchett, Arthur A.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,336,397, Cl. 560-51.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter having inflatable retention means. 4,335,723, Cl. 128-349.00B.

Paton, Boris E.: *See—*
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Paton, Vladimir E.: *See—*
Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Slepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

Patten, James W.; Moss, Ronald W.; and McClanahan, Edwin D., to Battelle Memorial Institute. Methods for making deposited films with improved microstructures. 4,336,118, Cl. 204-192.0EC.

Pattiniemi, Veikko; Koivisto, Eero; Kokki, Heikki; and Heikel, Aslak R., to Winter Osakeyhtio. Method of mixing paints and their toners. 4,335,759, Cl. 141-5.000.

Paust, Joachim: *See—*
Feichtmayr, Franz; Naarmann, Herbert; Paust, Joachim; and Penzien, Klaus, 4,336,201, Cl. 260-410.90V.

Pavelski, Linda: *See—*
Olansen, Ronald A.; and Pavelski, Linda, 4,335,748, Cl. 137-614.110.

Pavlopoulos, Theodore G.; and Altman, Daniel E., to United States of America, Navy. Method for fabricating single-mode and multimode fiber optic access couplers. 4,336,047, Cl. 65-3.310.

Pawletko, Joseph P., to International Business Machines Corporation. Electrolytic printing apparatus including preheating pressure pad therefor. 4,335,967, Cl. 400-119.000.

Payne, Alan J.; Aylott, Michael V.; Moore, Jimmie L.; and Yokley, Edward M., to Dow Chemical Company, The. Method and compositions using 1-aryl-1,2,3,4-tetrahydro-β-carboline-3-carboxylic acid for treating depression. 4,336,260, Cl. 424-266.000.

Payne, Harry R., to Cavalier Corporation. Cross link mechanism for staggered stack vending machine. 4,335,832, Cl. 221-67.000.

Pazmany, Jozsef: *See—*
Bucsky, Gyorgy; Kiss, Zoltan; Matyas, Ivan; Pazmany, Jozsef; Selyem, Gyula; and Tatrai, Lajos, 4,335,618, Cl. 73-861.560.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Kupka, Genevieve L.; and Zar-Ayan, Mehdi, 4,336,032, Cl. 44-56.000.

Peebles, Leighton H.; Uhlmann, Donald R.; and Warner, Steven B., to United States of America, Navy. Plasticization of carbon fibers. 4,336,283, Cl. 427-154.000.

Penczuk, Anatole G.; and Sirota, Julius, to National Starch and Chemical Corporation. Cold water resistant adhesive. 4,336,166, Cl. 524-53.000.

Pennwalt Corporation: *See—*
Shapiro, Leonard, 4,335,846, Cl. 233-7.000.

Penzien, Klaus: *See—*
Feichtmayr, Franz; Naarmann, Herbert; Paust, Joachim; and Penzien, Klaus, 4,336,201, Cl. 260-410.90V.

Pepera, Marc A.: *See—*
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Peploe, Trevor A.: *See—*
Smith, Joseph H.; and Peploe, Trevor A., 4,336,140, Cl. 210-677.000.

Perkin-Elmer Corporation, The: *See—*
deMey, Charles F., II, 4,335,971, Cl. 400-619.000.

Permelec Electrode Ltd.: *See—*
Sato, Hideo; and Shimamune, Takayuki, 4,336,282, Cl. 427-125.000.

Permutit-Boby Limited: *See—*
Smith, Joseph H.; and Peploe, Trevor A., 4,336,140, Cl. 210-677.000.

Peronek, Michael H., to FCI, Inc. Reciprocal bottle filling device. 4,335,761, Cl. 141-371.000.

Perry, Russell C., to Heinrich, George F. Interface unit. 4,336,449, Cl. 235-429.000.

Persson, Nils H. A.: *See*—
Carlsson, Enar I.; Persson, Nils H. A.; Samuelsson, Gustav B. R.; and Wetterlin, Kjell I. L., 4,336,267, Cl. 424-309.000.

Pertzsch, Albert; Rieger, Siegfried; and Ankenbrand, Friedrich, to Agfa-Gevaert Aktiengesellschaft. Method for coating magnetic, binder-containing dispersions on flexible substrates. 4,336,278, Cl. 427-47.000.

Pesch, Jurgen, to G. Siempelkamp GmbH & Co. Adjustable spacer assembly for platen press. 4,336,008, Cl. 425-406.000.

Peters, Thomas E.; and McColl, James R., to GTE Laboratories Incorporated. Luminescent material, method of making, and screens employing same. 4,336,313, Cl. 428-691.000.

Petersen, Sigrud R.: *See*—
Gorden, Dale I.; and Petersen, Sigrud R., 4,336,486, Cl. 322-63.000.

Petersen, Uwe; Voss, Eckart; and Stadler, Peter, to Bayer Aktiengesellschaft. Selectively protected 1-N-(ω-aminoalkoxycarbonyl)-sisomicin derivatives. 4,336,369, Cl. 536-13.900.

Peterson, William R., Jr.; and Arkles, Barry C., to Petrarch Systems, Inc. Ethylene bridged amine functional silanes, composites using the same, and intermediates therefor. 4,336,395, Cl. 556-413.000.

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Peterson, William R., Jr.; and Arkles, Barry C., 4,336,395, Cl. 556-413.000.

Petrolite Corporation: *See*—
Quinlan, Patrick M., 4,336,156, Cl. 252-389.00A.

Petrov, Evgeny A.: *See*—
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,335,804, Cl. 184-55.00A.

Petzold, W. Andreas: *See*—
Schwaab, Konstantin H.; Petzold, W. Andreas; and Glockle, Werner A., 4,335,666, Cl. 112-130.000.

Pez, Guido P., to Allied Corporation. Alkali metal amide catalyst. 4,336,162, Cl. 252-438.000.

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Dean, Robert R.; Mauleon, Jean-Louis; and Pfeiffer, Robert W., 4,336,160, Cl. 252-417.000.

Pfister, Rudolf: *See*—
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Pfizer Inc.: *See*—
Nagel, Arthur A., 4,336,368, Cl. 536-7.200.
Shively, Jesse E., 4,336,265, Cl. 424-283.000.

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Bartz, Gerald L., 4,335,622, Cl. 73-864.740.
Kenton, Joseph R., 4,336,053, Cl. 71-40.000.
Scott, Richard L., 4,335,610, Cl. 73-432.0PS.
Stapp, Paul R., 4,335,787, Cl. 166-273.000.

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Velasco, Ralph E., Jr.; and Pinson, A. G., 4,335,649, Cl. 99-327.000.

Pitarch, Esteve S.: *See*—
Coll, Antonio L. P.; Meseguer, Jose D.; Bianchini, Asuncion E.; and Pitarch, Esteve S., 4,336,376, Cl. 544-030.000.

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Cummings, John P.; Makos, Janice D.; and Pitkanen, David E., 4,336,320, Cl. 430-198.000.

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Buan, Danilo P., 4,336,529, Cl. 340-365.00R.
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Pittman, Alan K. Protective caps for water ski tow line handle. 4,335,478, Cl. 441-69.000.

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Le Roux, Jean; and Plagnard, Andre, 4,335,883, Cl. 277-3.000.

Plancon, Michel G., to Timex Corporation. Stator assembly for stepping motor. 4,336,471, Cl. 310-49.00R.

Plassmann, Paul: *See*—
Zucker, Friedrich J.; Osthaus, Georg; and Plassmann, Paul, 4,336,203, Cl. 260-417.000.

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Egli, Alwin, 4,335,844, Cl. 229-43.000.

Plectrum Pty. Limited: *See*—
Walker, Terence J., 4,335,537, Cl. 46-79.000.

Plessey Handel und Investments AG: *See*—
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Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See*—
Bac, Jean-Claude, 4,335,905, Cl. 285-20.000.

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Majewicz, Thomas G.; and Podlas, Thomas J., 4,336,146, Cl. 252-8.55R.

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Dubovetsky, Vasily Y.; Kopylov, Leonid N.; Kotov, Valentin A.; Saprykin, Jury I.; Siepchenko, Vladimir I.; Paton, Boris E.; Pokhodnya, Igor K.; Paton, Vladimir E.; Belfor, Mikhail G.; Leschinsky, Efim Y.; Kutovoi, Andrei N.; Unigovsky, Mikhail R.; Rotenfeld, Veniamin S.; Shlepakov, Valery N.; Gavriljuk, Jury A.; Mazel, Alexandr G.; Sheinkin, Mark Z.; and Serafin, Orest M., 4,336,436, Cl. 219-61.000.

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Polak's Frutal Works, B.V.: *See*—
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Polaroid Corporation: *See*—
Campbell, Stephen J.; Hambly, Warren E.; and Harrison, George C., 4,336,583, Cl. 363-21.000.
Cocco, Vincent L., 4,335,948, Cl. 354-275.000.
Idelson, Elbert M., 4,336,405, Cl. 562-448.000.
Johnson, Bruce K.; and Launie, Kenneth J., 4,335,945, Cl. 354-197.000.
Manning, Monis J., 4,335,959, Cl. 356-218.000.
Simon, Myron S., 4,336,387, Cl. 548-146.000.
Smith, Richard L., 4,336,483, Cl. 318-662.000.

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Osborn, Douglas B.; and Pons, Robert L., 4,335,578, Cl. 60-641.800.

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Sheps, Martin I.; Christensen, George S.; and Robson, George E., 4,335,512, Cl. 30-376.000.

Porter, Michael J., to United States Gypsum Company. Apparatus for cutting a moving sheet. 4,335,636, Cl. 83-177.000.

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Greiner, Yvan, 4,335,596, Cl. 73-6.000.

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Olansen, Ronald A.; and Pavelski, Linda, 4,335,748, Cl. 137-614.110.

Postalia GmbH: *See*—
Schleuchardt, Manfred, 4,335,651, Cl. 101-110.000.

Powell, Keith A.; and Collinson, Barbara A., to Imperial Chemical Industries Limited. Microbiological process for the production of poly(β-hydroxybutyric acid). 4,336,334, Cl. 435-146.000.

Power, Harold H. Proportioning and mixing immiscible liquids. 4,335,737, Cl. 137-98.000.

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Christenson, Roger M.; Maska, Rudolf; Dowbenko, Rostyslaw; and Hockswender, Thomas R., 4,335,829, Cl. 220-458.000.
DuBois, Donald W., 4,336,123, Cl. 204-252.000.
Gillery, F. Howard, 4,336,119, Cl. 204-192.00P.
Starr, Eugene W., 4,336,442, Cl. 219-400.000.

Prain, Henry M.; and Scott, Andrew M. Release device for a container. 4,335,826, Cl. 220-260.000.

Prat, Serge, to Regie Nationale des Usines Renault. Device for rapid changing of tools, particularly on large-scale machines. 4,335,499, Cl. 29-568.000.

Preble, Derwood: *See*—
Davis, Lawny; and Preble, Derwood, 4,335,766, Cl. 144-343.000.

President and Fellows of Harvard College: *See*—
Silhavy, Thomas J.; Shuman, Howard A.; Beckwith, Jon; and Schwartz, Maxime, 4,336,336, Cl. 435-172.000.

Prevorsek, Dusan C.: *See*—
Aharoni, Shaul M.; Prevorsek, Dusan C.; Schmitt, George J.; Harpell, Gary A.; and Lee, Lester T. C., 4,336,356, Cl. 525-388.000.

Prevot, Olivier H. C., to DITO. Peeling machine having a rotating cutter plate. 4,335,650, Cl. 99-593.000.

Price, Richard H. Submerged anaerobic filter waste treatment apparatus. 4,336,135, Cl. 210-151.000.

Price, Timothy K. Thermal window barrier of soft fabric. 4,335,774, Cl. 160-84.00R.

Prior, William C., to Kinetico, Inc. Float-actuated level control valve. 4,336,134, Cl. 210-127.000.

Probst, Heinz: *See*—
Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, 4,336,155, Cl. 252-301.210.

Produits Chimiques Ugine Kuhlmann: *See*—
Deabriges, Jean, 4,336,235, Cl. 423-332.000.

Prohaska, Hans: *See*—
Goertler, Horst; Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,336,482, Cl. 318-443.000.

Prohn, Christiaan M., to International Chemical Engineering Establishment. Process of and an apparatus for bending stretched plastic casings. 4,336,222, Cl. 264-519.000.

Pujari, Vimal K.: *See*—
McBrayer, Robert D.; and Pujari, Vimal K., 4,335,783, Cl. 165-8.000.

Pullman Incorporated: *See*—
Marsden, Dennis, 4,335,988, Cl. 414-387.000.

Punwani, Dharamvir: *See*—
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PureCycle Corporation: *See—*
Selby, Howard W., III; and Melanson, Paul C., 4,336,115, Cl. 204-98.000.
Quigley, Penny P.: *See—*
Quigley, Richard I., Jr.; and Quigley, Penny P., 4,335,471, Cl. 2-12.000.
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Quinlan, Patrick M., to Petrolite Corporation. Quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,336,156, Cl. 252-389.00A.
Quiring, Bernd: *See—*
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Quist, William E.; Hyatt, Michael V.; and Axter, Sven E., to Boeing Company, The. Aluminum alloy products and method of making same. 4,336,075, Cl. 148-2.000.
R. A. Industries, Inc.: *See—*
Apter, Robert F.; Apter, Carl; and Soliday, Joseph, 4,335,990, Cl. 414-457.000.
R.T.C. La Radiotechnique Compelec: *See—*
Tourneux, Michel, 4,336,413, Cl. 136-251.000.
R. W. Harnett Co.: *See—*
Ackley, Edward M., deceased; Ackley, Edward M., executor; and Ackley, James B., executor, 4,335,810, Cl. 198-380.000.
Rachner, Horst: *See—*
Goertler, Horst; Munz, Joachim; Prohaska, Hans; and Rachner, Horst, 4,336,482, Cl. 318-443.000.
Radford, Matthew F., to Marconi Company Limited, The. Radar systems. 4,336,538, Cl. 343-5.00R.
Radiation Engineering Inc.: *See—*
Biehl, Brian L.; and Lieberman, Stuart I., 4,336,532, Cl. 340-600.000.
Radiation Monitoring Devices, Inc.: *See—*
Squillante, Michael R., 4,336,285, Cl. 427-314.000.
Radiochemical Centre Limited, The: *See—*
Bryant, Jack; and Janicki, Mark, 4,336,454, Cl. 250-381.000.
Bryant, Jack, 4,336,455, Cl. 250-385.000.
Radiometer A/S: *See—*
Jorgensen, Hans; Sinnerup, Ib O.; and Danborg, Ole E., 4,336,000, Cl. 417-53.000.
Radtke, Waldemar, to Thyssen Aktiengesellschaft. Process and apparatus for the separation of metallurgical products. 4,336,078, Cl. 148-9.00R.
Ragen Precision Industries, Inc.: *See—*
Lopata, Ira, 4,335,955, Cl. 355-16.000.
Rager, Edgar A. Latch assembly for disk pack handle and the like. 4,335,816, Cl. 206-444.000.
Rainville, Dewey N. Apparatus for blow molding with active ingredient in blowing gas. 4,336,015, Cl. 425-74.000.
Ramuz, Henri: *See—*
Muller, Jean-Claude; and Ramuz, Henri, 4,336,380, Cl. 544-198.000.
Rapey, Kenneth: *See—*
George, Robert W.; Miller, Casper W.; and Rapey, Kenneth, 4,336,011, Cl. 425-129.00R.
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Smith, Charles A.; and Danevicz, Robert T., 4,336,589, Cl. 364-403.000.
Rapp, Joachim; and Bittmann, Peter, to Elba-Werk Maschinen-Gesellschaft mbH & Co. Method of preparing concrete mixtures. 4,335,966, Cl. 366-2.000.
Rappleyea, Frederick A., to Kendall Company, The. Retaining assembly for protective headgear. 4,335,472, Cl. 2-421.000.
Rapps, John W. Holding device for attachment to electrical installations. 4,335,863, Cl. 248-316.00D.
Rast, James P. Method of lining a furnace with roll-type insulation. 4,336,086, Cl. 156-71.000.
Rathjen, Claus: *See—*
Reischl, Artur; Quiring, Bernd; and Rathjen, Claus, 4,336,365, Cl. 528-44.000.
Rausch, Arthur B.: *See—*
Skaalen, Clifford I.; and Rausch, Arthur B., 4,335,670, Cl. 114-249.000.
Rauscher, Martin: *See—*
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RCA Corporation: *See—*
Abt, Richard F.; and Behrend, William L., 4,336,615, Cl. 455-108.000.
Goodwin, William V.; and Williams, James S., deceased, 4,336,540, Cl. 343-16.00R.
Griesemer, Douglas E., Sr., 4,335,926, Cl. 316-3.000.
Manson, Ernest T., 4,335,544, Cl. 51-277.000.
Medwin, Lawrence B., 4,336,550, Cl. 357-42.000.
Wine, Charles M., 4,336,555, Cl. 358-127.000.
Re, Luciano: *See—*
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Reaume, Leonard V.; and Hall, James O., to Magna American Corporation. Log splitter attachment for garden tiller. 4,335,762, Cl. 144-194.000.
Recker, Klaus; and Grogler, Gerhard, to Bayer Aktiengesellschaft. Solvent-free polyurethanes with fibrous reinforcing agents. 4,336,180, Cl. 524-847.000.
Reed, Charles C.: *See—*
Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., 4,335,756, Cl. 138-89.000.
Reef, Jan. Thread gaging instrument. 4,335,518, Cl. 33-199.00R.
Reeh, Ulrike; and Denk, Hans, to Siemens Aktiengesellschaft. Quick-setting epoxy resin compounds. 4,336,167, Cl. 523-451.000.
Reeves, Jerry L., to Towmotor Corporation. Side shift fork adjustable carriage. 4,335,992, Cl. 414-667.000.
Regan, Richard J., to Hewlett-Packard Company. Hum reduction circuit. 4,336,513, Cl. 333-173.000.
Regie Nationale des Usines Renault: *See—*
Prat, Serge, 4,335,499, Cl. 29-568.000.
Regnault, Luc, to Thomson-CSF. Tint restoring device employing a thermal printing head. 4,335,968, Cl. 400-120.000.
Rehbein, Erwin G., to Millcraft Housing Corp. Insulating skirt. 4,335,548, Cl. 52-169.110.
Reichhold Chemicals, Incorporated: *See—*
Sanfilippo, Salvatore G.; and White, James T., 4,336,174, Cl. 524-512.000.
Reimer, Ronald A., to Du Pont de Nemours, E. I., and Company. Separation of benzene from cyclohexane. 4,336,110, Cl. 203-60.000.
Reinehr, Ulrich; Jungverdorben, Hermann-Josef; Herbertz, Toni; Nogaj, Alfred; and Kleinschmidt, Peter, to Bayer Aktiengesellschaft. Process for hygroscopic, fibres and filaments of synthetic polymers. 4,336,214, Cl. 264-49.000.
Reischl, Artur; Quiring, Bernd; and Rathjen, Claus, to Bayer Aktiengesellschaft. Process for the continuous preparation of polyisocyanates containing uretdione groups and their use as starting components for the production of polyurethane resins. 4,336,365, Cl. 528-44.000.
Renga, James M., to Dow Chemical Company, The. Preparation of cyclic ethers. 4,336,195, Cl. 549-462.000.
Renkus-Heinz, Inc.: *See—*
Renkus, Jonas A., 4,336,425, Cl. 179-115.50H.
Renkus, Jonas A., to Renkus-Heinz, Inc. High frequency compression driver and method of manufacture thereof. 4,336,425, Cl. 179-115.50H.
Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,335,491, Cl. 24-230.00A.
Research Cottrell Technologies, Inc.: *See—*
Maloney, Kenneth L.; and de Volo, Nick B., 4,335,660, Cl. 110-206.000.
Reuter, Alfred, to Gebruder Linck, Maschinenfabrik und Eisengiesserei "Gatterlinck". Method and apparatus for the chipping dissection of tree logs into all-round machined lumber products. 4,335,767, Cl. 144-370.000.
Reuter, Rene F., to Goodyear Tire & Rubber Company, The. Tire with a reinforcing belt structure. 4,335,771, Cl. 152-361.0FP.
Reynes, Daniel: *See—*
Morlec, Emile; Reynes, Daniel; and Suzzoni, Jean-Pierre, 4,336,423, Cl. 179-18.0GF.
Reynolds, Gordon S.; and Todd, Robert J., to Sorenson Research Co., Inc. Apparatus and method for suppressing resonance in an electromanometry system. 4,335,729, Cl. 128-674.000.
Reynoso, Arturo S. Adjustable spa jet water aerator. 4,335,854, Cl. 239-428.500.
Rhone-Poulenc Agrochimie: *See—*
Rouy, Noel, 4,336,390, Cl. 548-221.000.
Ribbert, Hans. Device adapted to afford protection against falling rocks and avalanches in mountainous terrain. 4,335,868, Cl. 256-1.000.
Rice, Robert L.; and Knepper, Larimer J., to Sperry Corporation. Combine stone trap latch release. 4,335,563, Cl. 56-10.200.
Richards, John A. Valve for use in handling abrasive materials and method of wear prevention. 4,335,733, Cl. 137-1.000.
Richlie, Daniel G.: *See—*
Sadler, Thomas H.; and Richlie, Daniel G., 4,335,755, Cl. 138-145.000.
Richman, Paul, to Standard Microsystems Corporation. Method for manufacturing metal-oxide silicon devices. 4,335,502, Cl. 29-571.000.
Ricoh Company, Ltd.: *See—*
Iwata, Nobuo; and Suzuki, Takami, 4,335,970, Cl. 400-144.200.
Riddle, Stanley T.: *See—*
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Ridge, Edward J.; and Wilton, Graham H. Fence picket roller painter. 4,335,484, Cl. 15-230.110.
Rieber & Son A/S: *See—*
Parmann, Gunnar, 4,336,014, Cl. 425-403.000.
Rieger, Siegfried: *See—*
Pertzsch, Albert; Rieger, Siegfried; and Ankenbrand, Friedrich, 4,336,278, Cl. 427-47.000.
Rinnai Kabushiki Kaisha: *See—*
Koumura, Masahiko; and Mizuno, Hiroshi, 4,335,912, Cl. 292-336.300.
Riollet, Gilbert; and Bessay, Raymond, to Alsthom-Atlantique. Set of blades for a turbine and a turbine which includes such a set of blades. 4,335,995, Cl. 415-144.000.
Riordan, Thomas J.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Towle, Herbert C.; Riordan, Thomas J.; and Siragusa, George A., 4,336,018, Cl. 434-22.000.
Rittler, Hermann L., to Corning Glass Works. Integral vitreous article composed of opaque and transparent portions. 4,336,303, Cl. 428-334.000.

Robert Bosch GmbH: *See*—
Buck, Rainer; Kopse, Odon; and Amaya, Nestor R., 4,335,601, Cl. 73-119.00A.
Grabow, Kurt; Mahl, Willy; Muller, Karl-Heinz; Kochendorfer, Heinrich; Bertsch, Dieter; Mayer, Siegfried; Anhenn, Jorg; and Dworak, Wilhelm, 4,336,006, Cl. 418-131.000.
Hauler, Peter; and Hinke, Walter. 4,335,700, Cl. 123-617.000.
Mausner, Eberhard; and Brettschneider, Johannes, 4,335,694, Cl. 123-478.000.
Rose, Klaus; Kemmner, Ulrich; and Ruhl, Karl, 4,336,002, Cl. 417-203.000.
Schnurle, Hans; Horbelt, Michael; Drews, Ulrich; Werner, Peter; Glockler, Otto; Gunther, Dieter; and Bertsch, Richard, 4,335,696, Cl. 123-492.000.
Roberts, Lawrence R.: *See*—
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Robertshaw Controls Company: *See*—
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Robertson, John P.: *See*—
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Robinson, J. Ronald, to Crafco, Inc. Method for containerizing asphalt. 4,335,560, Cl. 53-440.000.
Robinson, Jimmie R.; and Thompson, Max E., to Flint & Walling, Inc. Refuse container lid system. 4,335,828, Cl. 220-334.000.
Roblin Industries, Inc.: *See*—
Berlin, Daniel, 4,335,892, Cl. 280-33.99R.
Roblin, Pierre G., to Soudure et Mecanique Appliquees du val Notre-Dame. Process and apparatus for boring sites. 4,335,793, Cl. 175-65.000.
Robotic Vision Systems, Inc.: *See*—
Di Matteo, Paul; and Ross, Joseph A., 4,335,962, Cl. 356-376.000.
Robson, George E.: *See*—
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Roche, David E.: *See*—
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Rockwell International Corporation: *See*—
Lee, Steven N., 4,335,504, Cl. 29-576.00B.
Rogahn, Gunther: *See*—
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Rohm and Haas Company: *See*—
Lewis, Sheldon N.; and Haggard, Richard A., 4,336,345, Cl. 525-107.000.
Niswender, Gordon D., 4,336,185, Cl. 260-112.00R.
Warburton, Charles E., Jr., 4,336,023, Cl. 8-115.700.
Rohr Industries, Inc.: *See*—
Blair, Winford, 4,336,292, Cl. 428-116.000.
Rohr, Wolfgang: *See*—
Eicken, Karl; Rohr, Wolfgang; Goetz, Norbert; and Wuerzer, Bruno, 4,336,061, Cl. 71-92.000.
Rolfe, Peter: *See*—
Ashmore, Michael P.; How, Thien V.; and Rolfe, Peter, 4,335,617, Cl. 73-861.250.
Rollins, Jack D.: *See*—
Best, Ralph E.; Bhandari, Vijay; Creeden, Richard L.; Mason, Michael E.; Panter, Harrison R.; Rollins, Jack D.; and Schreiber, Richard A., 4,336,460, Cl. 250-506.000.
Rooney, Clarence S.: *See*—
Cragoe, Edward J., Jr.; Patchett, Arthur A.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,336,397, Cl. 560-51.000.
Rosania, Lawrence J.: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,336,244, Cl. 424-35.000.
Rosch, Gunter: *See*—
Martini, Thomas; Erckel, Rudiger; Fruhbeis, Horst; Rosch, Gunter; and Probst, Heinz, 4,336,155, Cl. 252-301.210.
Rose, Klaus; Kemmner, Ulrich; and Ruhl, Karl, to Robert Bosch GmbH. Two stage pump having an electromotor device. 4,336,002, Cl. 417-203.000.
Rosenberger, Willibald R.: *See*—
Cook, George E.; Merrick, George J.; Schneider, Urban A.; and Rosenberger, Willibald R., 4,336,440, Cl. 219-124.340.
Rosenberry, George M., Jr., to General Electric Co. Apparatus having positioning and mounting means for joining two parts and method of using same. 4,335,972, Cl. 403-11.000.
Rosevear, Alan; and Mattock, Patrick, to United Kingdom Atomic Energy Authority. Composite materials comprising deformable xerogel within the pores of particulate rigid supports useful in chromatography. 4,336,161, Cl. 252-426.000.
Roseveare, Ronald N.: *See*—
James, Harold S.; and Roseveare, Ronald N., 4,335,517, Cl. 33-174.00L.
Ross, Adma S.: *See*—
Booth, James H.; and Ross, Adma S., 4,336,375, Cl. 544-027.000.
Ross, Joel M. Windmill construction. 4,335,996, Cl. 416-88.000.
Ross, Joseph A.: *See*—
Di Matteo, Paul; and Ross, Joseph A., 4,335,962, Cl. 356-376.000.
Ross, Kenneth B.; and Jones, Carl R. Whole blue crab freezing process. 4,336,274, Cl. 426-643.000.
Rossard, Jean-Claude: *See*—
Denissenko, Serge; and Rossard, Jean-Claude, 4,336,024, Cl. 8-142.000.
Rossodivita, Antonio: *See*—
Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, 4,336,188, Cl. 260-112.50R.
Rotenfeld, Veniamin S.: *See*—
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Bouveret, Marcel; and Devaud, Gerard, 4,335,745, Cl. 137-554.000.
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Sakazume, Takeshi, to Tokico Ltd. Reservoir tank. 4,335,825, Cl. 220-82.00R.
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Brand, Leonard J.; and Nadelson, Jeffrey, 4,336,378, Cl. 544-137.000.
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Schmidt, Martin: *See*—
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Schmidt, Peter; Brunn, Otto; Forker, Dieter; and Schmidt, Willi, to International Standard Electric Corporation. Method of aligning a color tube cone and apparatus for carrying out the method. 4,335,492, Cl. 29-25.130.

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Schmitt, George J.: *See*—
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Schmitz, Floyd A., Jr., to J. I. Case Company. Multiple lock for an engine compartment cover system. 4,335,909, Cl. 292-5.000.

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Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, to Hoechst Aktiengesellschaft. Composition containing colorants and esterified oxalkylates of aromatic hydroxy compounds. 4,336,025, Cl. 8-527.000.

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Schnoes, Heinrich K.: *See*—
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Schocher, Werner, to Gesellschaft fur Schneidtechnik mit beschrankter Haftung. Band-saw machine. 4,335,638, Cl. 83-801.000.

Schoelkopf, Walter. Method and apparatus for plastifying and tearing up of damaged roadsurfaces and covers. 4,335,975, Cl. 404-77.000.

Scholes, Addison B., to Ball Corporation. Method and apparatus for lubricating conductive substrates. 4,336,275, Cl. 427-27.000.

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Schubert, Wolfgang: *See*—
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Schultheiss, Wolfram; and Hoffmann, Harald, to Carl Freudenberg, Firma. Filter mat. 4,336,038, Cl. 55-274.000.

Schupp, Eberhard; Kempter, Fritz E.; and Gulbins, Erich, to BASF Aktiengesellschaft. Polyadducts containing unsaturated amide groups and their use in coatings. 4,336,116, Cl. 204-159.110.

Schuster, Victor R.: *See*—
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Scott, Richard L., to Phillips Petroleum Company. Multi-sample surface area measurement. 4,335,610, Cl. 73-432.0PS.
Scribner, Albert W., to Pitney Bowes Inc. Fusing apparatus. 4,335,951, Cl. 355-3.0FU.
Scull, Jon V.: *See—*
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Sea Horse Corporation, The: *See—*
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Seaman, William E.: *See—*
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Selby, Howard W., III; and Melanson, Paul C., to PureCycle Corporation. Acid base production unit. 4,336,115, Cl. 204-98.000.
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den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; and Merrell, Richard G., 4,336,553, Cl. 358-120.000.
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Takamatsu, Toshiaki; Shimizu, Keiichiro; Wada, Tomio; and Nonomura, Keisaku, 4,335,937, Cl. 350-336.000.
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Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., to Texas Medical Products, Inc. Sterilized medical tubing cover. 4,335,756, Cl. 138-89.000.
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Shaw, David N.; and Gagnon, Joseph A. L. N., to Dunham-Bush, Inc. Unloading control system for helical screw compressor refrigeration system. 4,335,582, Cl. 62-196.00R.
Shaw, Robert B., to Shell Oil Company. Filler material. 4,336,301, Cl. 428-323.000.
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Sherman, Robert F. Mod flap mounting device. 4,335,862, Cl. 248-289.100.
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Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Method for making a tri-metallic composite electrical contact. 4,335,507, Cl. 29-876.000.
Shibata, Hiroshi; and Enomoto, Tatsuya, to VLSI Technology Research Association. Method of making semiconductor memory device having memory cell elements composed of a transistor and a capacitor. 4,335,505, Cl. 29-577.00R.
Shibata, Toshihiro: *See—*
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Shields, Neal G., to Specific Cruise Systems, Inc. Speed governor with below dashboard servomotor. 4,335,799, Cl. 180-175.000.
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von Sichart, Frithjof; and Springstubbe, Wolf, 4,336,527, Cl. 340-347.0DA.
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Silvestri, George J., Jr., to Westinghouse Electric Corp. Nuclear power plant steam system. 4,336,105, Cl. 60-644.100.
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Smith, A. Glen. Oil well pumping string tubular extension for increasing oil to salt water ratio. 4,335,786, Cl. 166-106.000.
Smith, Charles A.; and Danevicz, Robert T., to Rapistan Division, Lear Siegler, Inc. Warehousing monitor and control system. 4,336,589, Cl. 364-403.000.
Smith, Frank R., to Deere & Company. PTO Rear mounting. 4,335,796, Cl. 180-53.00D.
Smith, Frank T. J., to Eastman Kodak Company. Method of fabricating a transparent metal oxide electrode structure on a solid-state electro-optical device. 4,336,295, Cl. 428-195.000.
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Smith, Joseph H.; and Peploe, Trevor A., to Permutit-Boby Limited. Water purification process. 4,336,140, Cl. 210-677.000.
Smith, Judson L. Vehicle drying machine and method. 4,335,526, Cl. 34-229.000.
Smith, Lawrence A., Jr., to Chemical Research & Licensing Company. Catalytic distillation process. 4,336,407, Cl. 568-697.000.
Smith, Richard L., to Polaroid Corporation. Capacitive position sensor. 4,336,483, Cl. 318-662.000.
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Societe Anonyme: "MAVIL": *See—*
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Societe Chimique des Charbonnages S.A.: *See—*
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Sohre, John S. Geothermal turbine. 4,336,039, Cl. 55-277.000.
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Soundcoat Company, Inc., The: *See*—
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Southerland, Robert; and Canition, James, to Southerland, Robert D. Rafter assembly and fixtures. 4,335,555, Cl. 52-639.000.

Southerland, Robert D.: *See*—
Southerland, Robert; and Canition, James, 4,335,555, Cl. 52-639.000.

Spahn, Heinrich: *See*—
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Specific Cruise Systems, Inc.: *See*—
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Sperry Corporation: *See*—
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Knepper, Larimer J., 4,335,564, Cl. 56-10.200.
Knepper, Larimer J.; and Komancheck, John J., 4,335,565, Cl. 56-10.200.
Rice, Robert L.; and Knepper, Larimer J., 4,335,563, Cl. 56-10.200.
Wong, Wilson T. C., 4,336,599, Cl. 364-752.000.

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SpinOptic, Inc.: *See*—
Alsina, Pierre A., 4,335,519, Cl. 33-288.000.

Spirig, Ernst. Electrolysis apparatus. 4,336,122, Cl. 204-222.000.

Spoor, Herbert: *See*—
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Sprague Electric Company: *See*—
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Squillante, Michael R., to Radiation Monitoring Devices, Inc. Method to synthesize and produce thin films by spray pyrolysis. 4,336,285, Cl. 427-314.000.

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Stabilus GmbH: *See*—
Molders, Werner, 4,335,871, Cl. 267-64.280.

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Stafford, Donald C., to Chicago Bridge & Iron Company. Offshore tower with ball and socket joint having fluid flow passage. 4,335,979, Cl. 405-202.000.

Standard Microsystems Corporation: *See*—
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Standard Oil Company, The: *See*—
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Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., 4,336,012, Cl. 425-131.100.

Stapp, Paul R., to Phillips Petroleum Company. Method of oil recovery with surfactant flooding. 4,335,787, Cl. 166-273.000.

Starr, Eugene W., to PPG Industries, Inc. Combination radiation and convection heater with convection current directing means. 4,336,442, Cl. 219-400.000.

Staskal, Maynard L.; and Eissens, Alvin J. Dry particle distributor for the treatment of forage. 4,335,855, Cl. 239-654.000.

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Felix, Raymond A., 4,336,062, Cl. 71-98.000.

Stayner, Robert A., to Chevron Research Company. Borate-containing water-in-oil microemulsion fluid. 4,336,147, Cl. 252-49.500.

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Stenkvist, Sven-Einar: *See*—
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Stephen, Robert L.; Kablitz, Carl; van Dura, Dietz; Atkin, Curtis L.; and Jacobsen, Stephen C., to University of Utah Research Foundation. Composition and method for prevention and treatment of dialysis induced peritonitis. 4,335,716, Cl. 128-213.00A.

Stephens, Christopher M., to Max-Mi Corporation. Vaporization chamber. 4,335,698, Cl. 123-537.000.

Sterling Drug Inc.: *See*—
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., 4,336,400, Cl. 560-73.000.

Sternicha, Felix: *See*—
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Sternik, Jury L.: *See*—
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Stewart, Robert D.; and Taylor, Thomas E., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger having an air assisted bed drain. 4,335,661, Cl. 110-245.000.

Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Herdin, Gunther; Kauer, Erhard; Muckenhuber, Maximilian; and Egger, Eugen, 4,335,686, Cl. 123-90.600.

Stieff, Lorin R. Field method for detecting deposits containing uranium and thorium. 4,336,451, Cl. 250-255.000.

Stone Container Corporation: *See*—
Kent, Ronald I., 4,335,843, Cl. 229-27.000.

Stopp, Peter G., to Glacier Metal Company, Limited, The. Thrust bearing. 4,335,925, Cl. 308-160.000.

Stovell, John E.; Aughton, John; and Yi, Alberto, to Crosfield Electronics Limited. Optical modulators and apparatus including such modulators. 4,335,939, Cl. 350-385.000.

Strahm, Christian; and Strudel, Werner, to Lindauer Dornier Gesellschaft mbH. Chainless mercerizing equipment using a dye padder. 4,335,593, Cl. 68-13.00R.

Strickland, Fredrick G. Bi-directional underwater communication system. 4,336,537, Cl. 340-850.000.

Stromswold, Chester E.; Martel, Robert T.; Apostolos, John; and Boland, Robert P., to Sanders Associates, Inc. Method and apparatus for increasing the sweep rate of a linearly swept frequency oscillator. 4,336,511, Cl. 331-178.000.

Stroud, Lebern W. Dual alternator feedback system. 4,336,485, Cl. 320-15.000.

Strudel, Werner: *See*—
Strahm, Christian; and Strudel, Werner, 4,335,593, Cl. 68-13.00R.

Stubblefield, Jerry D. Shoe sole construction. 4,335,530, Cl. 36-83.000.

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den Toonder, Pieter; Seltenrijch, Johannes C.; Stubbs, Graham S.; and Merrell, Richard G., 4,336,553, Cl. 358-120.000.

Sud, Rahul; and Hardee, Kim C., to Inmos Corporation. Substrate bias generator. 4,336,466, Cl. 307-297.000.

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Abe, Osame; Suda, Seiji; and Furuhashi, Toshio, 4,335,689, Cl. 123-339.000.

Suda, Yoshio: *See*—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,336,211, Cl. 264-22.000.

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Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, to Nissan Motor Company, Limited. Internal combustion engine. 4,335,687, Cl. 123-198.00F.

Sugimoto, Hitoshi, to Aisin Seiki Kabushiki Kaisha. Refrigerating system. 4,335,579, Cl. 62-6.000.

Sugimoto, Osamu: *See*—
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Sugimura, Kazuo; and Sugimura, Nobuyuki, 4,335,751, Cl. 138-30.000.

Sugita Sangyo Kabushiki Kaisha: *See*—
Sugita, Toshimaru, 4,335,803, Cl. 182-12.000.

Sugita, Toshimaru, to Sugita Sangyo Kabushiki Kaisha. Gangway ladder arrangement. 4,335,803, Cl. 182-12.000.

Sugiyama, Tohru: *See*—
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Sugiyama, Yasuo: *See*—
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Sumitomo Chemical Company, Limited: *See*—
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Sagoh, Masakazu; Noguchi, Takanobu; and Yasui, Seimei, 4,336,347, Cl. 525-139.000.

Sumitomo Light Metal Industries, Ltd.: *See*—
Nagata, Koji; Ogiso, Akio; and Sudo, Kyuji, 4,335,677, Cl. 118-306.000.

Sumner, Maurice N., to Sea Horse Corporation, The. Flanged pipe. 4,335,752, Cl. 138-97.000.

Sunbeam Plastics Corporation: *See*—
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Montgomery, Gary V.; and Bush, Randall G., 4,335,823, Cl. 215-206.000.

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Superior Rubber Industries Ltd.: *See—*
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Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. Overcurrent protection circuit for inverter. 4,336,563, Cl. 361-93.000.

Suzuki, Nobuo: *See—*
Sekine, Hirokazu; and Suzuki, Nobuo, 4,336,556, Cl. 358-213.000.

Suzuki, Takami: *See—*
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Suzuki, Togi: *See—*
Shiozaki, Masahiro; Nawata, Kiyoshi; Wada, Osamu; Tsunawaki, Kiyokazu; Kuratsuji, Takatoshi; Funakoshi, Wataru; and Suzuki, Togi, 4,336,307, Cl. 428-398.000.

Suzuki, Toshio; Ise, Junichi; Yanabu, Satoru; and Mizoguchi, Hitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for treating noxious gases. 4,336,414, Cl. 174-14.00R.

Suzzoni, Jean-Pierre: *See—*
Morlec, Emile; Reynes, Daniel; and Suzzoni, Jean-Pierre, 4,336,423, Cl. 179-18.0GF.

Swan, Jye P.; Pastva, John V., Jr.; and Dignan, Donald J., to Eastern Company, The. Paddle lock with handle disconnect. 4,335,595, Cl. 70-149.000.

Swaney, William A., to Owens-Corning Fiberglas Corporation. Insulated cryogenic liquid container. 4,335,831, Cl. 220-901.000.

Swanson, William C.; and Orsborn, Jesse H., to International Harvester Co. Header height position control for a cotton harvester. 4,335,561, Cl. 56-10.200.

Swanson, William C., to International Harvester Co. Implement level lift system with rephasing valves. 4,335,894, Cl. 280-43.230.

Sweet, David L.: *See—*
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,335,991, Cl. 414-519.000.

Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment, Inc. Mobile transport for fluid cargo. 4,335,991, Cl. 414-519.000.

Swift Independent Packing Company: *See—*
Kang, Chunghee K.; Jodlowski, Ronald F.; Donnelly, Thomas H.; and Warner, William D., 4,336,271, Cl. 426-55.000.

Swisher, George W., Jr.; and Steele, Thomas L., to CMI Corporation. Cutting head for a paved roadway resurfacing apparatus. 4,335,921, Cl. 299-86.000.

Swiss Aluminium Ltd.: *See—*
Morianz, Josef V., 4,335,779, Cl. 164-440.000.

Sybron Corporation: *See—*
Hirth, Emil, 4,335,920, Cl. 297-408.000.

Syntex (U.S.A.) Inc.: *See—*
Nieminen, Timo, 4,336,457, Cl. 250-439.00P.

Synthelabo: *See—*
Koletar, Gabor I.; Frost, Jonathan B.; DuPont, Regis; Lardenois, Patrick; Morel, Claude; and Najer, Henry, 4,336,256, Cl. 424-256.000.

Szabo nee Paulyuk, Paula: *See—*
Lorant, Ivan; Csernyanszky, Imre; Murlasits, Gyula; Rusznyak, Rezso; and Szabo nee Paulyuk, Paula, 4,336,300, Cl. 428-316.600.

Szemeredi, Robert S.; and Troup, Edward M., to Lyntone Engineering, Inc. Motion transmission device. 4,335,853, Cl. 239-239.000.

Szeto, Leo H.: *See—*
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,336,506, Cl. 372-62.000.

Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,336,331, Cl. 435-24.000.

Takahashi, Katsuhiro: *See—*
Yonezu, Kunio; Tsubota, Masaharu; and Takahashi, Katsuhiro, 4,336,314, Cl. 429-66.000.

Takahashi, Kihei, to Yoshida Kogyo K.K. Method of and apparatus for manufacturing a continuous slide fastener stringer. 4,336,220, Cl. 264-229.000.

Takahashi, Kiyofumi: *See—*
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,336,028, Cl. 8-624.000.

Takahashi, Kokaji: *See—*
Miyahara, Akimitsu; Kanazawa, Toshihiko; Takahashi, Kokaji; Ushikubo, Hiroji; and Kawano, Kuniaki, 4,335,746, Cl. 137-576.000.

Takahashi, Shigeru: *See—*
Yasugi, Masahiko; Takahashi, Shigeru; and Hashimoto, Toshio, 4,335,612, Cl. 73-593.000.

Takahashi, Shin-ichi: *See—*
Ishikawa, Kazumasa; Takahashi, Shin-ichi; and Yoneyama, Masahide, 4,336,501, Cl. 330-109.000.

Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, to Nippon Telegraph & Telephone Public Corporation; and Fujikura Cable Works, Ltd. Method for producing multi-component glass fiber preform. 4,336,049, Cl. 65-3.120.

Takahashi, Tadashi: *See—*
Morinaga, Shigeki; Miyashita, Kunio; Takahashi, Tadashi; Maeda, Takeo; and Yamashita, Seizi, 4,336,475, Cl. 310-198.000.

Takaku, Tetsuo: *See—*
Sakakura, Mitsuo; and Takaku, Tetsuo, 4,336,120, Cl. 204-192.0SP.

Takamatsu, Toshiaki; Shimizu, Keiichiro; Wada, Tomio; and Nonomura, Keisaku, to Sharp Kabushiki Kaisha. Electrode assembly of a liquid crystal display. 4,335,937, Cl. 350-336.000.

Takamatsu, Toshiaki: *See—*
Nonomura, Keisaku; Uede, Hisashi; Wada, Tomio; and Takamatsu, Toshiaki, 4,335,936, Cl. 350-335.000.

Takamoto, Shyunji: *See—*
Edamura, Mizuo; Takamoto, Shyunji; Furuitsu, Satoshi; Bekku, Norikatsu; and Katayama, Toshiaki, 4,336,076, Cl. 148-3.000.

Takamura, Masayuki: *See—*
Sata, Takeo; Takamura, Masayuki; Iijima, Kenzaburo; and Fukuda, Norio, 4,336,066, Cl. 75-211.000.

Takase, Sadao, to Nissan Motor Company, Ltd. Data processing system for electronic control of automotive vehicle devices with noise prevention. 4,336,593, Cl. 364-431.000.

Takasu, Yoshio: *See—*
Fukumoto, Hiroshi; and Takasu, Yoshio, 4,336,318, Cl. 430-120.000.

Takata, Yasunobu, to Nissan Motor Company Limited; and Ichiko Industries Limited. Remote controller and more particularly to slide member thereof. 4,336,572, Cl. 362-66.000.

Takaya, Yoshikazu: *See—*
Kanada, Eiji; Tsubai, Yasuo; Yamada, Shoji; Takaya, Yoshikazu; and Senga, Takao, 4,336,321, Cl. 430-234.000.

Takeda Chemical Industries, Ltd.: *See—*
Onishi, Isatsugu; Furuoya, Itsuo; and Minato, Ichiro, 4,336,205, Cl. 260-465.00C.

Takeda, Kenji; Hattori, Yoshiyuki; and Kasagi, Takao, to Nippon Soken, Inc. Worm type compressor with compressed fluid escape grooves. 4,336,007, Cl. 418-183.000.

Takemae, Yoshihiro: *See—*
Nakano, Masao; Takemae, Yoshihiro; and Kabashima, Katsuhiko, 4,336,465, Cl. 307-238.300.

Takeuchi, Yukihisa: *See—*
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,335,574, Cl. 60-311.000.

Takizawa, Norimasa: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; Takizawa, Norimasa; Hagihara, Kazuyo; and Akatsuka, Tadami, 4,336,331, Cl. 435-24.000.

Talon, Inc.: *See—*
Bahr, Karl E., 4,335,817, Cl. 206-610.000.

Tamm, Paul W., to Chevron Research Company. Combustion of pyrolyzed carbon containing solids in staged turbulent bed. 4,336,128, Cl. 208-11.00R.

Tanaka, Hiroshi, to NGK Spark Plug Co., Ltd. Ceramic throw-away tips and process for producing the same. 4,336,305, Cl. 428-336.000.

Tanaka, Kunihiko: *See—*
Hosaka, Hirokazu; Tanimoto, Kenji; Tanaka, Kunihiko; Morita, Toshiharu; Shiota, Katsuyuki; Ueda, Yuji; and Kai, Seiichi, 4,336,109, Cl. 203-34.000.

Tanaka, Mamoru. Rewritable programmable logic array. 4,336,601, Cl. 364-900.000.

Tanaka, Mitsugu; and Tsuda, Momotoshi, to Fuji Photo Film Co., Ltd. Silver halide emulsion containing yellow coupler. 4,336,327, Cl. 430-556.000.

Tanaka, Sadaaki, to Sony Corporation. Vertical aperture correction circuit. 4,336,552, Cl. 358-21.00R.

Tanaka, Shigeru; Iwaki, Katsutaro; Matsuhashi, Hajime; and Banzai, Keiichiro, to Nippondenso Co., Ltd. Generation control apparatus for vehicle generators. 4,336,487, Cl. 322-99.000.

Tanaka, Toshiaki: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Etoh, Yukihiro; and Tanaka, Toshiaki, 4,335,687, Cl. 123-198.00F.

Tang, Reginald T.: *See—*
Diamond, Steven E.; Tovrog, Benjamin S.; Mares, Frank; and Tang, Reginald T., 4,336,241, Cl. 423-588.000.

Tanimoto, Akira: *See—*
Koike, Mamoru; Komaki, Shigeki; Inoue, Tomohiro; Tanimoto, Akira; and Yoshida, Yoshisaburo, 4,336,530, Cl. 340-365.0VL.

Tanimoto, Kenji: *See—*
Hosaka, Hirokazu; Tanimoto, Kenji; Tanaka, Kunihiko; Morita, Toshiharu; Shiota, Katsuyuki; Ueda, Yuji; and Kai, Seiichi, 4,336,109, Cl. 203-34.000.

Taniyama, Tsukasa; Sekino, Masaaki; and Kishimoto, Michimasa, to Toyobo Co., Ltd. Permeation separation apparatus. 4,336,138, Cl. 210-321.400.

Tantraporn, Wirojana, to General Electric Company. Method for producing gallium arsenide single crystal ribbons. 4,336,099, Cl. 156-614.000.

Tarantola, Luciano, to Industrie Pirelli S.p.A. Apparatus for cabling wires. 4,335,571, Cl. 57-58.520.

Tatrai, Lajos: *See—*
Bucsky, Gyorgy; Kiss, Zoltan; Matyas, Ivan; Pazmany, Jozsef; Selyem, Gyula; and Tatrai, Lajos, 4,335,618, Cl. 73-861.560.

Tatsumi, Hideo: *See—*
Kanamaru, Hisanobu; Tohkairin, Akira; Tatsumi, Hideo; and Okabe, Moisei, 4,335,496, Cl. 29-520.000.

Taylor, James L., to Caterpillar Tractor Co. Door holder. 4,335,911, Cl. 292-262.000.

Taylor, Thomas E.: *See—*
Stewart, Robert D.; and Taylor, Thomas E., 4,335,661, Cl. 110-245.000.

TDK Electronics Co., Ltd.: *See—*
Okuyama, Kiyotaka; Hosaka, Akihiko; and Isobe, Yukihiro, 4,336,310, Cl. 428-447.000.

Teachout, Donald O. Band and clip article. 4,335,490, Cl. 24-114.500.
Teijin Limited: *See—*
Shiozaki, Masahiro; Nawata, Kiyoshi; Wada, Osamu; Tsunawaki, Kiyokazu; Kuratsuji, Takatoshi; Funakoshi, Wataru; and Suzuki, Togi, 4,336,307, Cl. 428-398.000.
Tenneco Chemicals, Inc.: *See—*
Hoch, Samuel; and Ceprini, Mario Q., 4,336,168, Cl. 524-300.000.
Tenneco Oil Company: *See—*
Schorre, Kenneth R.; Nye, James O.; Dixon, Dennie W.; and Nepute, Carl, 4,336,046, Cl. 62-28.000.
Terrell, George C., to Conservation Technologies, Inc. Thermal processing system. 4,335,663, Cl. 110-264.000.
Terry, John C.: *See—*
Francis, John F.; Kirk, Bryan R.; and Terry, John C., 4,335,508, Cl. 30-47.000.
Tervamaki, Jukka; and Suovaniemi, Osmo, to kommandiittiyhtio Finnpipette Osmo A. Suovaniemi. Pipette. 4,335,621, Cl. 73-863.320.
Tesluck, Robert L.: *See—*
Meyers, Alma D.; Tesluck, Robert L.; and Tesluck, Thomas R., 4,335,562, Cl. 56-10.200.
Tesluck, Thomas R.: *See—*
Meyers, Alma D.; Tesluck, Robert L.; and Tesluck, Thomas R., 4,335,562, Cl. 56-10.200.
Texaco Inc.: *See—*
Woodle, Robert A., 4,335,598, Cl. 73-53.000.
Texas Instruments Incorporated: *See—*
Hewes, Charles R., 4,336,613, Cl. 375-9.000.
Texas Medical Products, Inc.: *See—*
Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., 4,335,756, Cl. 138-89.000.
Texas Oil and Gas Corporation: *See—*
Boley, Jack W., 4,335,740, Cl. 137-364.000.
Textron, Inc.: *See—*
Hague, Robert Z.; Marsicano, Matthew F.; and Hantman, Edwin F., 4,335,498, Cl. 29-568.000.
Marinko, Joseph A., 4,336,484, Cl. 318-696.000.
Thermal Instrument Company: *See—*
Boyd, Branin A., 4,335,605, Cl. 73-204.000.
Thermo Electron Corporation: *See—*
Davis, Jerry P., 4,335,684, Cl. 123-1.00A.
Thettu, Raghulinga R.: *See—*
Gunzelmann, Edward J.; Thettu, Raghulinga R.; and Wood, Larry M., 4,335,950, Cl. 355-3.00R.
Thiokol Corporation: *See—*
Barnes, Michael W., 4,336,408, Cl. 568-853.000.
Thomamueller, Dieter; and Brunsch, Klaus, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Universal coupling member for two shafts and method of manufacturing such a coupling member. 4,335,587, Cl. 64-11.00B.
Thomander, Ture, to Bulten-Kanthal AB. Heat treatment furnace. 4,336,412, Cl. 373-110.000.
Thompson, Daniel T. Dough forming, dividing and cutting apparatus. 4,336,010, Cl. 425-141.000.
Thompson, Max E.: *See—*
Robinson, Jimmie R.; and Thompson, Max E., 4,335,828, Cl. 220-334.000.
Thompson, Morice W.: *See—*
Backhouse, Alan J.; Bromley, Charles; and Thompson, Morice W., 4,336,177, Cl. 523-201.000.
Thomson-CSF: *See—*
Houdard, Jean-Pierre; Julie, Jean-Jacques; and Leoni, Bernard G., 4,336,600, Cl. 364-785.000.
Regnault, Luc, 4,335,968, Cl. 400-120.000.
Thorman, Charles A.: *See—*
Benning, Leroy J.; and Thorman, Charles A., 4,335,814, Cl. 206-198.000.
Thrandorf, Hans-Peter: *See—*
Winker, Gerald; Thrandorf, Hans-Peter; and Blum, Christian, 4,335,674, Cl. 118-110.000.
Threshold Technology, Inc.: *See—*
Welch, John R.; and Oxenberg, Sheldon C., 4,336,421, Cl. 179-1.05D.
Thyssen Aktiengesellschaft: *See—*
Radtke, Waldemar, 4,336,078, Cl. 148-9.00R.
Tilley, Jefferson W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,336,382, Cl. 544-374.000.
Timex Corporation: *See—*
Plancon, Michel G., 4,336,471, Cl. 310-49.00R.
Timmons, David R., to Automation Industries, Inc. Air device with flexible mounting system. 4,335,647, Cl. 98-40.00D.
Todd, Robert J.: *See—*
Reynolds, Gordon S.; and Todd, Robert J., 4,335,729, Cl. 128-674.000.
Tohkairin, Akira: *See—*
Kanamaru, Hisanobu; Tohkairin, Akira; Tatsumi, Hideo; and Okabe, Moisei, 4,335,496, Cl. 29-520.000.
Tokico Ltd.: *See—*
Sakazume, Takeshi, 4,335,825, Cl. 220-82.00R.
Toko, Inc.: *See—*
Sakakura, Mitsuo; and Takaku, Tetsuo, 4,336,120, Cl. 204-192.0SP.
Tokyo Keiki Co., Ltd.: *See—*
Masuzawa, Isao; Yamamoto, Kanshi; and Hirokawa, Yoichi, 4,336,594, Cl. 364-457.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See—*
Uehara, Akira; Kiyota, Hiroyuki; Miyazaki, Shigekazu; and Nakane, Hisashi, 4,336,438, Cl. 219-121.0PG.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Sekine, Hirokazu; and Suzuki, Nobuo, 4,336,556, Cl. 358-213.000.
Suzuki, Toshio; Ise, Junichi; Yanabu, Satoru; and Mizoguchi, Hitoshi, 4,336,414, Cl. 174-14.00R.
Torita, Fumio, 4,335,592, Cl. 68-12.00R.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichinose, Noboru; Yokomizo, Yuhji; and Katsura, Masaki, 4,336,163, Cl. 252-518.000.
Tomarin, Seymour A. Tennis court surface with sand topdressing. 4,336,286, Cl. 428-17.000.
Tomaszek, Paul A.: *See—*
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,336,580, Cl. 362-347.000.
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, to Nihon Sanmo Dyeing Co., Ltd. Method of making electrically conducting fibers. 4,336,028, Cl. 8-624.000.
Tomita, Masahiro: *See—*
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,335,574, Cl. 60-311.000.
Tomy Kogyo Co., Inc.: *See—*
Nishimiya, Toru, 4,335,878, Cl. 273-119.00R.
Toray Industries, Inc.: *See—*
Kondo, Tsuneyuki, 4,336,410, Cl. 585-827.000.
Torii, Sigeru; Uneyama, Kenji; Onishi, Takashi; Fujita, Yoshiji; Ishiguro, Michihiro; and Nishida, Takashi, to Kuraray Co., Ltd. 1,3-Cyclohexanedione derivatives. 4,336,202, Cl. 549-466.000.
Torikata, Akio: *See—*
Arai, Mamoru; Torikata, Akio; Enokita, Ryuzou; Haneishi, Tatsuo; and Nakajima, Mutsuo, 4,336,249, Cl. 424-121.000.
Torita, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic washer. 4,335,592, Cl. 68-12.00R.
Toro Company, The: *See—*
Comer, Robert C., 4,335,567, Cl. 56-12.700.
Hurd, Lyle E., 4,335,566, Cl. 56-11.800.
Keeney, Donald A.; and Scherbring, David J., 4,335,569, Cl. 56-249.000.
Torre, Alton J.; and Schuster, Victor R., to Zenith Radio Corporation. Apparatus for testing an hermetic seal in a glass cathode ray tube. 4,336,492, Cl. 324-54.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Motomura, Noriyuki; and Tsuboi, Hiroyuki, 4,335,778, Cl. 164-150.000.
Totsune, Atsushi; Itoh, Yasuhito; and Yamabe, Hitoshi, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 4,335,699, Cl. 123-568.000.
Tourneux, Michel, to R.T.C. La Radiotechnique Compelec. Solar panels. 4,336,413, Cl. 136-251.000.
Tovrog, Benjamin S.: *See—*
Diamond, Steven E.; Tovrog, Benjamin S.; Mares, Frank; and Tang, Reginald T., 4,336,241, Cl. 423-588.000.
Towle, Herbert C.: *See—*
Marshall, Albert H.; Shaw, Bon F.; Towle, Herbert C.; Riordan, Thomas J.; and Siragusa, George A., 4,336,018, Cl. 434-22.000.
Towmotor Corporation: *See—*
Reeves, Jerry L., 4,335,992, Cl. 414-667.000.
Toyo Kogyo Co., Ltd.: *See—*
Izuno, Sadami; and Kiyomitsu, Isao, 4,335,917, Cl. 297-366.000.
Toyobo Co., Ltd.: *See—*
Taniyama, Tsukasa; Sekino, Masaaki; and Kishimoto, Michimasa, 4,336,138, Cl. 210-321.400.
Toyoda Koki Kabushiki Kaisha: *See—*
Munekata, Kenichi; Ohkoshi, Fumihiko; Kamiya, Yoji; and Hasegawa, Toshifumi, 4,335,500, Cl. 29-568.000.
Toyoguchi, Yoshinori: *See—*
Eda, Nobuo; Iijima, Takashi; and Toyoguchi, Yoshinori, 4,336,315, Cl. 429-194.000.
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, to Shin-Etsu Chemical Co., Ltd. Medicaments containing an organosilicon compound. 4,336,251, Cl. 424-184.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Motonami, Masanao; and Ishikawa, Yoshiaki, 4,335,902, Cl. 280-804.000.
Yasugi, Masahiko; Takahashi, Shigeru; and Hashimoto, Toshio, 4,335,612, Cl. 73-593.000.
Transidyne General Corporation: *See—*
Enzer, Steven E.; Sarrine, Robert J.; and Wilfong, William L., 4,336,121, Cl. 204-195.00R.
Travenol Laboratories, Inc.: *See—*
Siposs, George G., 4,336,224, Cl. 422-46.000.
Trayer, Frank C. Method and apparatus for short circuit protection of high voltage distribution systems. 4,336,520, Cl. 337-191.000.
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, to BASF Aktiengesellschaft. 1,4-Cycloalkano-oxazepines, salts thereof and analgesic uses thereof. 4,336,263, Cl. 424-244.000.
Trexler, Philip C. Isolation enclosure members. 4,335,712, Cl. 128-1.00R.
Tri-Tronics, Inc.: *See—*
Gonda, Gerald J.; and Vancza, John, Jr., 4,335,682, Cl. 119-29.000.
Trinkwalder, Joseph C., to Sherwood-Selpac Corp. Float warning device. 4,335,734, Cl. 137-77.000.
Trio Kabushiki Kaisha: *See—*
Kumagai, Morio, 4,336,534, Cl. 340-753.000.

Triplett, Jacob: *See—*
Lordi, Frank E.; and Triplett, Jacob, 4,336,354, Cl. 525-301.000.
Troup, Edward M.: *See—*
Szemeredi, Robert S.; and Troup, Edward M., 4,335,853, Cl. 239-239.000.
Truchard, James J.: *See—*
Hill, Eugene; Jansons, Arnolds; and Truchard, James J., 4,336,607, Cl. 367-123.000.
Tsai, Min H., to Unitek Corporation. Palladium alloys for fusion to porcelain. 4,336,290, Cl. 428-76.000.
Tseung, Alfred C. C.; Onuchukwu, Anthony I.; and Chan, Ho C. Prevention of hydrogen embrittlement of metals in corrosive environments. 4,335,754, Cl. 138-146.000.
Tsubai, Yasuo: *See—*
Kanada, Eiji; Tsubai, Yasuo; Yamada, Shoji; Takaya, Yoshikazu; and Senga, Takao, 4,336,321, Cl. 430-234.000.
Tsuboi, Hiroyuki: *See—*
Motomura, Noriyuki; and Tsuboi, Hiroyuki, 4,335,778, Cl. 164-150.000.
Tsubota, Masaharu: *See—*
Yonezu, Kunio; Tsubota, Masaharu; and Takahashi, Katsuhiro, 4,336,314, Cl. 429-66.000.
Tsuchiya, Hiroaki; and Soma, Ikuo, to Canon Kabushiki Kaisha. Variable magnification copying apparatus. 4,335,953, Cl. 355-14.0CH.
Tsuda, Momotoshi: *See—*
Tanaka, Mitsugu; and Tsuda, Momotoshi, 4,336,327, Cl. 430-556.000.
Tsuda, Tatsuya; and Ohno, Yoshikatsu, to Sharp Kabushiki Kaisha. Control panel assembly. 4,336,569, Cl. 361-395.000.
Tsuji, Nobuo: *See—*
Yamada, Yasuyuki; Masuyama, Kenichi; and Tsuji, Nobuo, 4,336,308, Cl. 428-425.900.
Tsumuraya, Shigeo: *See—*
Fukuta, Kenji; Onooka, Ryuzo; Aoki, Eiji; and Tsumuraya, Shigeo, 4,336,296, Cl. 428-257.000.
Tsunawaki, Kiyokazu: *See—*
Shiozaki, Masahiro; Nawata, Kiyoshi; Wada, Osamu; Tsunawaki, Kiyokazu; Kuratsuji, Takatoshi; Funakoshi, Wataru; and Suzuki, Togi, 4,336,307, Cl. 428-398.000.
Tsunekawa, Tokuichi; and Amikura, Takashi, to Canon Kabushiki Kaisha. Camera provided with automatic focus detector. 4,335,942, Cl. 354-25.000.
Tsuruta, Teiji; and Nitadori, Yoshiaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process of preparing linear polydivinylbenzene. 4,336,361, Cl. 526-180.000.
Tullar, Benjamin F.: *See—*
Minatoya, Hiroaki; Tullar, Benjamin F.; and Conway, Walter D., 4,336,400, Cl. 560-73.000.
Tussing, Reinhold, to Siemens Aktiengesellschaft. Dyeing and marking agent. 4,336,027, Cl. 8-611.000.
Tyrone Hydraulics, Inc.: *See—*
McBurnett, James R.; and Eley, James M., 4,336,005, Cl. 418-126.000.
Ube Industries, Ltd.: *See—*
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,336,215, Cl. 264-63.000.
Ueda, Yuji: *See—*
Hosaka, Hirokazu; Tanimoto, Kenji; Tanaka, Kunihiko; Morita, Toshiharu; Shiota, Katsuyuki; Ueda, Yuji; and Kai, Seiichi, 4,336,109, Cl. 203-34.000.
Uede, Hisashi: *See—*
Nonomura, Keisaku; Uede, Hisashi; Wada, Tomio; and Takamatsu, Toshiaki, 4,335,936, Cl. 350-335.000.
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Wickenden, Dennis K.; and Vincent, Vera M., to General Electric Company Limited, The. Manufacture of monolithic LED arrays for electroluminescent display devices. 4,335,501, Cl. 29-569.00L.
Wickiser, David I., to Eli Lilly and Company. 1-Benzoyl-3-(isoxazolyl or benzisoxazolyl)-ureas and insecticidal use thereof. 4,336,264, Cl. 424-272.000.
Wieder, Armin, to Siemens Aktiengesellschaft. Monolithic static memory cell. 4,336,604, Cl. 365-182.000.
Wiederkehr, Heinz: *See*—
Kuse, Dieter; Wiederkehr, Heinz; and Winkler, Norbert, 4,336,456, Cl. 250-436.000.
Wiedman, Francis W., III: *See*—
Kotecha, Harish N.; and Wiedman, Francis W., III, 4,336,603, Cl. 365-182.000.
Wilfong, William L.: *See*—
Enzer, Steven E.; Sarrine, Robert J.; and Wilfong, William L., 4,336,121, Cl. 204-195.00R.
Wilkinson, William K.: *See*—
Lynch, Charles E.; and Wilkinson, William K., 4,336,022, Cl. 8-115.500.
Wilkinson, William R.: *See*—
Sharp, Russell G.; Reed, Charles C.; Cooley, Denton A.; Crane, Terry N.; and Wilkinson, William R., 4,335,756, Cl. 138-89.000.
Williams, Ben H. Motor vehicle fishing rod and luggage carrier. 4,335,840, Cl. 224-315.000.
Williams, Don W.: *See*—
Bice, Howard W.; and Williams, Don W., 4,336,444, Cl. 219-505.000.
Williams, Elizabeth J., executrix: *See*—
Goodwin, William V.; and Williams, James S., deceased, 4,336,540, Cl. 343-16.00R.
Williams, Frederic D. M.: *See*—
Bubik, Leslie; Barclay, Stanley B.; Knaitner, Eugene L.; Williams, Frederic D. M.; and Alm, Bernard D., 4,335,772, Cl. 157-1.280.
Williams, Haydn W. R.: *See*—
Cragoe, Edward J., Jr.; Patchett, Arthur A.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,336,397, Cl. 560-51.000.
Williams, James S., deceased: *See*—
Goodwin, William V.; and Williams, James S., deceased, 4,336,540, Cl. 343-16.00R.
Williams, Richard: *See*—
Beatty, Bobby D.; Daniel, Russell D.; Humerickhouse, Billy J.; and Williams, Richard, 4,335,656, Cl. 102-340.000.
Williams, Stanley E., to George Koch Sons, Inc. Apparatus for advancing and forming a wire. 4,335,758, Cl. 140-88.000.
Williamson, John D., to Omnitronics Research Corporation. Device for the induction of specific brain wave patterns. 4,335,710, Cl. 128-1.00C.
Wilson, David S.: *See*—
Hannett, William J.; Brendel, Thomas E.; and Wilson, David S., 4,335,580, Cl. 62-79.000.
Wilson, Jeffrey V., to United States of America, Navy. Survey spar system for precision offshore seafloor surveys. 4,335,520, Cl. 33-312.000.
Wilton, Graham H.: *See*—
Ridge, Edward J.; and Wilton, Graham H., 4,335,484, Cl. 15-230.110.
Winblad, Nils, to Aktiebolaget Bofors. Driving controls for a vehicle, particularly a tracked combat vehicle. 4,335,795, Cl. 180-6.200.

Wine, Charles M., to RCA Corporation. Video accessory having channel identifier. 4,336,555, Cl. 358-127.000.

Wingstrom, Ed: *See*—
Wingstrom, Lincoln; and Wingstrom, Ed, 4,335,704, Cl. 126-293.000.

Wingstrom, Lincoln; and Wingstrom, Ed. Draft air secondary combustion apparatus for stoves. 4,335,704, Cl. 126-293.000.

Winker, Gerald; Thrandorf, Hans-Peter; and Blum, Christian, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Apparatus for application of a hot melt glue onto the back surfaces of book blocks. 4,335,674, Cl. 118-110.000.

Winkler, Norbert: *See*—
Kuse, Dieter; Wiederkehr, Heinz; and Winkler, Norbert, 4,336,456, Cl. 250-436.000.

Winslow, John M., to Minnesota Mining and Manufacturing Company. Decolorizable imaging system. 4,336,323, Cl. 430-339.000.

Winter, George R., III, to UOP Inc. Apparatus for the solvent extraction of aromatic hydrocarbons from a hydrocarbon mixture. 4,336,106, Cl. 196-14.520.

Winter, Karl, to CEAG Verfahrenstechnik GmbH. Method and arrangement for the thermal regeneration of charged adsorption materials. 4,336,159, Cl. 252-411.00R.

Winter Osakeyhtio: *See*—
Pattiniemi, Veikko; Koivisto, Eero; Kokki, Heikki; and Heikel, Aslak R., 4,335,759, Cl. 141-5.000.

Wirt, Leon A.; and Webb, Arthur A., to Caterpillar Tractor Co. Method for making a shear blade. 4,335,631, Cl. 76-104.00A.

Wirtgen, Reinhard. Machine for coating milled or peeled road surfaces. 4,335,974, Cl. 404-92.000.

Wirth, Hermann O.; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Complex compound, process for their preparation, and their use. 4,336,148, Cl. 252-49.700.

Wisander, Donald W.: *See*—
Bill, Robert C.; and Wisander, Donald W., 4,336,276, Cl. 427-34.000.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; Wichmann, Joseph K.; and Fivizzani, Mary A., 4,336,193, Cl. 260-239.570.

Wiskur, Darrell D. Game apparatus and means for playing the same. 4,335,879, Cl. 273-260.000.

Wisniewski, Waldemar S.; and More, Henry S., to Exploration Logging, Inc. Solenoid control circuit. 4,336,564, Cl. 361-154.000.

Witzel, Gunter: *See*—
Muller, Anton; Rauscher, Martin; and Witzel, Gunter, 4,335,489, Cl. 24-68.0CT.

WOCO Franz-Josef Wolf & Co.: *See*—
Wolf, Franz-Josef, 4,336,009, Cl. 425-116.000.

Woessner, Warren D.: *See*—
Biddlecom, William G.; Kluender, Harold C.; and Woessner, Warren D., 4,336,404, Cl. 560-231.000.

Wolf, Franz-Josef, to WOCO Franz-Josef Wolf & Co. Molding tool. 4,336,009, Cl. 425-116.000.

Wolf, Karl: *See*—
Frei, Hans-Joachim; and Wolf, Karl, 4,335,724, Cl. 128-395.000.

Wong, Wilson T. C., to Sperry Corporation. Circuit for performing a square root calculation. 4,336,599, Cl. 364-752.000.

Wood, Larry M.: *See*—
Gunzelmann, Edward J.; Thettu, Raghulinga R.; and Wood, Larry M., 4,335,950, Cl. 355-3.00R.

Wood, Obert R., II: *See*—
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,336,506, Cl. 372-62.000.

Wood, Russell J.; and Garshelis, Ivan J. Submersible pressure transducer device. 4,335,608, Cl. 73-301.000.

Woodhouse, Richard G.; and Salway, Peter H., to Lucas Industries Limited. Acceleration sensor. 4,336,497, Cl. 324-162.000.

Woodle, Robert A., to Texaco Inc. UOP Characterization factor monitor. 4,335,598, Cl. 73-53.000.

Woods, Lorne: *See*—
Kashyap, Satish; Dunn, John G.; Woods, Lorne; and Vachon, Frank, 4,336,435, Cl. 219-10.55F.

Woolf, Raymond F.: *See*—
Adams, Thomas E.; Murray, Walter D.; and Woolf, Raymond F., 4,336,595, Cl. 364-508.000.

World Stress (Gas Contracts) Limited: *See*—
Badrock, John, 4,336,016, Cl. 431-158.000.

Worstmann, Wolfgang: *See*—
Treiber, Hans J.; Lenke, Dieter; and Worstmann, Wolfgang, 4,336,263, Cl. 424-244.000.

Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, to Colorcon, Inc. Colored medicinal tablet, natural color pigment and method for using the pigment in coloring food, drug and cosmetic products. 4,336,244, Cl. 424-35.000.

Wright, Jack D., to General Electric Company. Gas turbine engine mixer. 4,335,573, Cl. 60-261.000.

Wrobel, Joseph J.: *See*—
Howe, Dennis G.; Marchant, Alan B.; and Wrobel, Joseph J., 4,336,545, Cl. 346-1.100.

Wu, Peter T.; and Grabkowski, Stephen E., to General Electric Company. Detecting internal abnormalities in turbines. 4,335,600, Cl. 73-117.300.

Wu, Wan C., to Monsanto Company. Process for grafting large rubber particles as ABS polyblends. 4,336,355, Cl. 525-316.000.

Wuerzer, Bruno: *See*—
Eicken, Karl; Rohr, Wolfgang; Goetz, Norbert; and Wuerzer, Bruno, 4,336,061, Cl. 71-92.000.

Wunderlich, Egmar; Meckel, Joachim; Wagener, Dietrich; and Smieskol, Stefan, to Didier Engineering GmbH. Apparatus for the production of ammonia synthesis gas from purified coke oven gas. 4,336,229, Cl. 422-148.000.

Wysk, Stanley R., to Combustion Engineering, Inc. Method of operating a MHD power plant. 4,336,469, Cl. 310-11.000.

Xerox Corporation: *See*—
Fogarasy, Attila A., 4,335,841, Cl. 227-90.000.
Gunzelmann, Edward J.; Thettu, Raghulinga R.; and Wood, Larry M., 4,335,950, Cl. 355-3.00R.
Kukucka, William P.; and Daughton, John W., 4,335,949, Cl. 355-3.00R.
Murray, Hugh; and Marks, Lawrence M., 4,336,565, Cl. 361-225.000.
Phelps, Russell L., 4,335,954, Cl. 355-14.0SH.

Yagi, Masahiro: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,373, Cl. 542-447.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,374, Cl. 542-469.000.

Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to Ube Industries, Ltd. Sintered ceramic body and process for production thereof. 4,336,215, Cl. 264-63.000.

Yamabe, Hitoshi: *See*—
Totsune, Atsushi; Itoh, Yasuhito; and Yamabe, Hitoshi, 4,335,699, Cl. 123-568.000.

Yamada, Shigeyasu, to NGK Spark Plug Co., Ltd. Spark plug. 4,336,477, Cl. 313-142.000.

Yamada, Shoji: *See*—
Kanada, Eiji; Tsubai, Yasuo; Yamada, Shoji; Takaya, Yoshikazu; and Senga, Takao, 4,336,321, Cl. 430-234.000.

Yamada, Yasuyuki; Masuyama, Kenichi; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording media. 4,336,308, Cl. 428-425.900.

Yamaguchi, Sizuo: *See*—
Kume, Kazunari; and Yamaguchi, Sizuo, 4,336,609, Cl. 368-188.000.

Yamamoto, Haruhisa; and Matumoto, Shinji, to Nippon Zeon Co. Ltd. Process for producing conjugated diolefins. 4,336,409, Cl. 585-622.000.

Yamamoto, Kanshi: *See*—
Masuzawa, Isao; Yamamoto, Kanshi; and Hirokawa, Yoichi, 4,336,594, Cl. 364-457.000.

Yamamoto, Yasushi: *See*—
Toyoshima, Shigeshi; Sato, Ryuichi; Ito, Koichi; Shinohara, Toshio; Yamamoto, Yasushi; and Ichinohe, Shoji, 4,336,251, Cl. 424-184.000.

Yamamura, Takemi: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,336,215, Cl. 264-63.000.

Yamashita, Seizi: *See*—
Morinaga, Shigeki; Miyashita, Kunio; Takahashi, Tadashi; Maeda, Takeo; and Yamashita, Seizi, 4,336,475, Cl. 310-198.000.

Yanabu, Satoru: *See*—
Suzuki, Toshio; Ise, Junichi; Yanabu, Satoru; and Mizoguchi, Hitoshi, 4,336,414, Cl. 174-14.00R.

Yanagawa, Mikio, to Casio Computer Co., Ltd. Electronic calculator with musical note generation. 4,336,598, Cl. 364-710.000.

Yasnovsky, V. M.; and MacDonald, Donald M., to International Paper Company. Process for activating cellulose pulp to improve ease of esterification. 4,336,370, Cl. 536-58.000.

Yasugi, Masahiko; Takahashi, Shigeru; and Hashimoto, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of detecting irregularities on bevel gears. 4,335,612, Cl. 73-593.000.

Yasui, Seimei: *See*—
Sagoh, Masakazu; Noguchi, Takanobu; and Yasui, Seimei, 4,336,347, Cl. 525-139.000.

Yasutake, Katsuya: *See*—
Koyama, Tsuneyuki; and Yasutake, Katsuya, 4,336,559, Cl. 360-73.000.

Yi, Alberto: *See*—
Stovell, John E.; Aughton, John; and Yi, Alberto, 4,335,939, Cl. 350-385.000.

Yokley, Edward M.: *See*—
Payne, Alan J.; Aylott, Michael V.; Moore, Jimmie L.; and Yokley, Edward M., 4,336,260, Cl. 424-266.000.

Yokogawa Electric Works, Ltd.: *See*—
Shindo, Shotaro; and Hayashi, Eiji, 4,336,494, Cl. 324-62.000.

Yokomizo, Yuhji: *See*—
Ichinose, Noboru; Yokomizo, Yuhji; and Katsura, Masaki, 4,336,163, Cl. 252-518.000.

Yokoyama, Tomio: *See*—
Fujita, Tsuyoshi; Yokoyama, Tomio; and Ishi, Ichiro, 4,336,551, Cl. 357-80.000.

Yokozeki, Seiki, to Matsushita Electric Industrial Co., Ltd. Heating control apparatus for cooking oven with vapor sensor. 4,336,433, Cl. 219-10.55B.

Yoneyama, Masahide: *See*—
Ishikawa, Kazumasa; Takahashi, Shin-ichi; and Yoneyama, Masahide, 4,336,501, Cl. 330-109.000.

Yonezu, Kunio; Tsubota, Masaharu; and Takahashi, Katsuhiro, to Japan Storage Battery Company, Ltd. Pasted type lead-acid battery. 4,336,314, Cl. 429-66.000.

Yoshida Kogyo K.K.: *See*—
Takahashi, Kihei, 4,336,220, Cl. 264-229.000.

Yoshida, Yoshisaburo: *See*—
Koike, Mamoru; Komaki, Shigeki; Inoue, Tomohiro; Tanimoto, Akira; and Yoshida, Yoshisaburo, 4,336,530, Cl. 340-365.0VL.

Yoshikuni, Yoshiaki: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,373, Cl. 542-447.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Yagi, Masahiro; Kura, Kohei; and Shirahase, Ichiro, 4,336,374, Cl. 542-469.000.

Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for drawn film, cold drawn film made of said composition and process for manufacture of said film. 4,336,212, Cl. 264-22.000.

Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi - Dow Limited. Cold drawn film made of an olefin polymer blend composition. 4,336,350, Cl. 525-211.000.

Yoshimura, Tokuo; Okazaki, Hiroshi; Soeda, Mahito; and Yushima, Takeharu, to Nippon Steel Chemical Co., Ltd.; and Shinnikka Environmental Engineering Co., Ltd. Method for treating a water-containing waste oil. 4,336,129, Cl. 208-180.000.

Yoshioka, Kazuo: *See*—
Kitamura, Shigeo; Yoshioka, Kazuo; Seriyama, Yoshiharu; and Misuta, Hiroshi, 4,336,196, Cl. 549-416.000.

Young, Ainslie T., Jr.: *See*—
Shackle, Dale R.; and Young, Ainslie T., Jr., 4,336,067, Cl. 106-21.000.

Young, Bill M.: *See*—
Murphey, Joseph R.; and Young, Bill M., 4,335,788, Cl. 166-278.000.

Young, Michael J.: *See*—
Mitchell, Colin H.; and Young, Michael J., 4,336,614, Cl. 376-405.000.

Yushima, Takeharu: *See*—
Yoshimura, Tokuo; Okazaki, Hiroshi; Soeda, Mahito; and Yushima, Takeharu, 4,336,129, Cl. 208-180.000.

Zacharin, David. Jigsaw puzzle for use in bilingual education. 4,336,020, Cl. 434-157.000.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Walter, Wolfgang, 4,335,749, Cl. 137-625.220.

Zappelli, Piergiorgio; Rossodivita, Antonio; Pappa, Rosario; and Re, Luciano, to Snamprogetti, S.p.A. Method for the preparation of macromolecularized adenine derivatives. 4,336,188, Cl. 260-112.50R.

Zar-Ayan, Mehdi: *See*—
Kupka, Genevieve L.; and Zar-Ayan, Mehdi, 4,336,032, Cl. 44-56.000.

Zeeh, Bernd; Buschmann, Ernst; and Jung, Johann, to BASF Aktiengesellschaft. Agents for regulating plant growth containing triazolyl glycol ethers, and the use thereof. 4,336,055, Cl. 71-76.000.

Zenith Radio Corporation: *See*—
DeVries, Adrian J.; and Hansen, Kai, 4,336,515, Cl. 333-195.000.
Torre, Alton J.; and Schuster, Victor R., 4,336,492, Cl. 324-54.000.

Zepkin, Marvin. Hand held electric ejecting device. 4,335,834, Cl. 222-63.000.

Ziman, Stephen D., to Chevron Research Company. Herbicidal and plant-growth-regulating N-(heterocyclyl)-methylacetanilide. 4,336,059, Cl. 71-90.000.

Zodiac: *See*—
de Pous, Bernard, 4,335,473, Cl. 4-488.000.

Zodrow, Rudolf, to Jagenberg Werke AG. Labeling station for a labeling machine, especially for bottles. 4,336,098, Cl. 156-568.000.

Zucker, Friedrich J.; Osthaus, Georg; and Plassmann, Paul, to Zucker, Friedrich J. Process for the continuous production of alkali metal salts of fatty acids. 4,336,203, Cl. 260-417.000.

Zweekly, Raymond. Metalcutting insert for roughing and finishing. 4,335,984, Cl. 407-114.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JUNE, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ex-Cell-O Corporation: *See*—
Wunder, William G., Re. 30,976, Cl. 51-58.000.

Finmac Incorporated: *See*—
Zecher, Robert F., Re. 30,977, Cl. 51-422.000.

Jacobson, Clayton J. Self-righting power-driven aquatic vehicle. Re. 30,978, Cl. 114-270.000.

Jounstone, Richard: *See*—
Stobbe, Richard E.; and Jounstone, Richard, Re. 30,975, Cl. 33-174.00L.

Kearney & Trecker Corporation: *See*—
Stobbe, Richard E.; and Jounstone, Richard, Re. 30,975, Cl. 33-174.00L.

Stobbe, Richard E.; and Jounstone, Richard, to Kearney & Trecker Corporation. Spindle probe with orbital transformer. Re. 30,975, Cl. 33-174.00L.

Technicon Instruments Corporation: *See*—
Watts, Leonard, Re. 30,979, Cl. 164-119.000.

Watts, Leonard, to Technicon Instruments Corporation. Method and apparatus for casting metals. Re. 30,979, Cl. 164-119.000.

Wunder, William G., to Ex-Cell-O Corporation. Honing machine. Re. 30,976, Cl. 51-58.000.

Zecher, Robert F., to Finmac Incorporated. Method and apparatus for deflashing. Re. 30,977, Cl. 51-422.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Beall, Glenn L., 265,126, Cl. D24-32.000.
Terk, Harold S., 265,124, Cl. D24-29.000.

Abramo, John G.: *See*—
Meyers, Marc A., 265,027, Cl. D6-37.000.

Abramo, Samuel V.: *See*—
Meyers, Marc A., 265,027, Cl. D6-37.000.

Aerne, Arthur O. Picture frame hook. 265,053, 6-22-82, Cl. D8-370.000.

American Greetings Corporation: *See*—
Johnson, John; and Gandolf, Ed, 265,024, Cl. D6-24.000.

American Safety Razor Company: *See*—
Hadtke, Frederick B., 265,056, Cl. D9-342.000.

Apron Linen Tree of California, Inc.: *See*—
Tomasi, Anne S., 265,038, Cl. D6-271.000.

Arballo, Alfred D. Stepping pad for a game. 265,105, 6-22-82, Cl. D21-48.000.

Aulbert, Harold V.; and Horton, Charles M., to Burlington Furniture Div. of Burlington Industries, Inc. Dresser or the like. 265,031, 6-22-82, Cl. D6-154.000.

Baffo, Charles M.: *See*—
Brown, Philip R.; Baffo, Charles M.; and Meyers, Edward J., 265,032, Cl. D6-172.000.

Beall, Glenn L., to Abbott Laboratories. Test tube rack or the like. 265,126, 6-22-82, Cl. D24-32.000.

Bee, James W. M., to Northern Telecom Limited. Telephone set base. 265,089, 6-22-82, Cl. D14-60.000.

Bergin, Gerald T. Wood burning heater. 265,121, 6-22-82, Cl. D23-97.000.

Bessone, Carlo S.; and Roche, William J., to GTE Products Corporation. Lamp. 265,134, 6-22-82, Cl. D26-93.000.

Bessone, Carlo S., to GTE Products Corporation. Lamp. 265,135, 6-22-82, Cl. D26-93.000.

Black, John O. Lamp. 265,133, 6-22-82, Cl. D26-70.000.

Blank, Elliott E., to Clorox Company, The. Dispensing closure. 265,060, 6-22-82, Cl. D9-446.000.

Bone, Arnold R., to Dennison Manufacturing Company. Bundling tie. 265,055, 6-22-82, Cl. D8-394.000.

Bowman, George D., to Model A and Model T Motor Car Reproduction Corporation, The. Chair back for an automobile. 265,037, 6-22-82, Cl. D6-197.000.

Bright Industries Inc.: *See*—
Sorrentino, Vincent P., 265,028, Cl. D6-52.000.

Brooks, Nolan R. Handbag light. 265,132, 6-22-82, Cl. D26-24.000.

Brown, Philip R.; Baffo, Charles M.; and Meyers, Edward J., to Mobil Oil Corporation. Merchandise display rack. 265,032, 6-22-82, Cl. D6-172.000.

Bunger, Richard E.; and Hancock, Roy J., to Corral Industries, Inc. Cattle feed bunker. 265,138, 6-22-82, Cl. D30-13.000.

Burlington Furniture Div. of Burlington Industries, Inc.: *See*—
Aulbert, Harold V.; and Horton, Charles M., 265,031, Cl. D6-154.000.

Butler, Lawrence M. Projection kaleidoscope. 265,095, 6-22-82, Cl. D16-11.000.

Cal-Tuf Glass Corporation: *See*—
Guardia, James F., 265,048, Cl. D8-328.000.

Canon Kabushiki Kaisha: *See*—
Masaki, Nobuo, 265,096, Cl. D16-31.000.

Carrier Corporation: *See*—
Hoyle, Walter W., 265,123, Cl. D23-141.000.

Carson, Michael: *See*—
Fether, Kenneth B.; Grosse, Maurice; and Carson, Michael, 265,035, Cl. D6-191.000.

Churchill, Robert L., to Kransco Manufacturing, Inc. Aqua planing board. 265,116, 6-22-82, Cl. D21-228.000.

Clorox Company, The: *See*—
Blank, Elliott E., 265,060, Cl. D9-446.000.

Coban, Muzaffer. Projection television cabinet. 265,090, 6-22-82, Cl. D14-79.000.

Cobb, Richard E.: *See*—
Janda, George M.; and Cobb, Richard E., 265,088, Cl. D14-53.000.

Corning Glass Works: *See*—
LeVan, Kenneth R., 265,069, Cl. D11-164.000.

Corral Industries, Inc.: *See*—
Bunger, Richard E.; and Hancock, Roy J., 265,138, Cl. D30-13.000.

Cousins, Morison S., to Gillette Company, The. Hydromassage device. 265,127, 6-22-82, Cl. D24-38.000.

Croghan, Theodore. Retractable aircraft mounted dry material spreader. 265,093, 6-22-82, Cl. D15-13.000.

Crowe, William F. Contact lens and accessory container. 265,098, 6-22-82, Cl. D16-129.000.

Datakey, Inc.: *See*—
Flies, William P., 265,049, Cl. D8-347.000.

de Keller, David G. Game board. 265,104, 6-22-82, Cl. D21-40.000.

Dennison Manufacturing Company: *See*—
Bone, Arnold R., 265,055, Cl. D8-394.000.

Dial Industries: *See*—
Macho, Jan M.; and Oxford, Richard O., 265,026, Cl. D6-32.000.

Divoky, Alvin L. Information display device for motor vehicle interior. 265,083, 6-22-82, Cl. D12-191.000.

Dornseif, Eike, to Dornseif Sport Gesellschaft mit beschraenkter Haftung. Roller skate. 265,115, 6-22-82, Cl. D21-226.000.

Dornseif Sport Gesellschaft mit beschraenkter Haftung: *See*—
Dornseif, Eike, 265,115, Cl. D21-226.000.

Drackett Company, The: *See*—
White, Thomas Q.; and Drummond, Archie G., Jr., 265,059, Cl. D9-376.000.

Drummond, Archie G., Jr.: *See*—
White, Thomas Q.; and Drummond, Archie G., Jr., 265,059, Cl. D9-376.000.

Durand, Jean-Jacques. Plate or similar article. 265,039, 6-22-82, Cl. D7-5.000.

Ernest, Robert O.: *See*—
Lee, Ernest; and Ernest, Robert O., 265,041, Cl. D7-41.000.

Ewry, Edwin E. Bottle or the like. 265,058, 6-22-82, Cl. D9-349.000.

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Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Bathroom handle or the like. 265,117, 6-22-82, Cl. D23-29.000.
Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Combined bathtub drain cover and handle. 265,118, 6-22-82, Cl. D23-31.000.
Flies, William P., to Datakey, Inc. Electronic information key. 265,049, 6-22-82, Cl. D8-347.000.
Foerster, David, to Medical Engineering Corporation. Mammary bandage. 265,128, 6-22-82, Cl. D24-49.000.
Freeborn, Stuart; Lucas, George W., Jr.; and McQuarrie, Ralph, to Lucasfilm, Ltd. Toy figure. 265,109, 6-22-82, Cl. D21-175.000.
Friedman, Alan H., to Syracuse China Corporation. Dinner plate or similar article. 265,040, 6-22-82, Cl. D7-35.000.
Gageby, Steven D. Chair. 265,029, 6-22-82, Cl. D6-73.000.
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Henriques, Joseph. Freestanding wood burning stove. 265,120, 6-22-82, Cl. D23-97.000.
Hentzschel, Walter G.; and Kingston, George W., to TECO Products & Testing Corporation. Wet post anchor base. 265,051, 6-22-82, Cl. D8-354.000.
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CLASS 53

138 A 4,335,559
440 4,335,560

CLASS 55

97 4,336,035
159 4,336,036
171 4,336,037
274 4,336,038
277 4,336,039
304 4,336,040
341 R 4,336,041
387 4,336,042
483 4,336,043

CLASS 56

10.2 4,335,561
4,335,562
4,335,563
4,335,564
4,335,565
11.8 4,335,566
12.7 4,335,567
4,335,568
249 4,335,569
327 R 4,335,570

CLASS 57

58.52 4,335,571
283 4,335,572

CLASS 60

261 4,335,573
311 4,335,574
319 4,335,575
398 4,335,576
421 4,335,577
641.8 4,335,578
644.1 4,336,105

CLASS 62

6 4,335,579
17 4,336,044
4,336,045
28 4,336,046
79 4,335,580
123 4,335,581
196 R 4,335,582
345 4,335,583
388 4,335,584

CLASS 64

11 B 4,335,587

CLASS 65

3.12 4,336,049
3.31 4,336,047
18.4 4,336,048
82 4,336,050

CLASS 66

125 A 4,335,588
202 4,335,589
207 4,335,590

CLASS 68

12 R 4,335,591
4,335,592
13 R 4,335,593

CLASS 69

19.3 4,335,594

CLASS 70

149 4,335,595

CLASS 71

6 4,336,051
28 4,336,052
40 4,336,053
67 4,336,054
76 4,336,055
88 4,336,056
4,336,057
4,336,058
90 4,336,059
4,336,060
92 4,336,061
98 4,336,062

CLASS 73

6 4,335,596
17 A 4,335,597
53 4,335,598
116 4,335,599
117.3 4,335,600
119 A 4,335,601
152 4,335,602
159 4,335,603
163 4,335,604
204 4,335,605
290 R 4,335,607
298 4,335,606
301 4,335,608
426 4,335,609
432 PS 4,335,610
517 B 4,335,611
593 4,335,612
599 4,335,613
774 4,335,614
799 4,335,615
861.05 4,335,616
861.25 4,335,617
861.56 4,335,618
862.17 4,335,619
863.11 4,335,620
863.32 4,335,621
864.74 4,335,622

CLASS 74

477 4,335,623
482 4,335,624
493 4,335,625
496 4,335,626
572 4,335,627
594.4 4,335,628
689 4,335,629

CLASS 75

35 4,336,063
60 4,336,064
200 4,336,065
211 4,336,066

CLASS 76

25 R 4,335,630
104 A 4,335,631

CLASS 81

446 4,335,632

CLASS 82

31 4,335,633

CLASS 83

13 4,335,634
160 4,335,635
177 4,335,636
452 4,335,637
801 4,335,638

CLASS 84

1.01 4,335,639
218 4,335,640
297 R 4,335,641
454 4,335,642

CLASS 89

196 4,335,643
198 4,335,644

CLASS 91

388 4,335,645

CLASS 98

2 4,335,646
40 D 4,335,647
59 4,335,648

CLASS 99

327 4,335,649
593 4,335,650

CLASS 101

110 4,335,651

CLASS 102

202.1 4,335,652
202.8 4,335,653
4,335,654
209 4,335,655
340 4,335,656
433 4,335,657

CLASS 104

69 4,335,658

CLASS 106

21 4,336,067
84 4,336,068
97 4,336,069
122 4,336,070
170 4,336,071

CLASS 108

28 4,335,659

CLASS 110

206 4,335,660
245 4,335,661
263 4,335,662
264 4,335,663
346 4,335,664

CLASS 112

80 4,335,665
130 4,335,666
158 E 4,335,667
4,335,668

CLASS 114

103 4,335,669
249 4,335,670
270 Re.30,978
274 4,335,671

CLASS 118

50 4,335,672
52 4,335,673
110 4,335,674
126 4,335,675
303 4,335,676
306 4,335,677

CLASS 119

1 4,335,678
4,335,679
3 4,335,680
17 4,335,681
29 4,335,682

CLASS 122

4 D 4,335,683

CLASS 123

1 A 4,335,684
90.5 4,335,685
90.6 4,335,686
196 A 4,335,688
198 F 4,335,687
339 4,335,689
407 4,335,690
410 4,335,691
418 4,335,692
438 4,335,693
478 4,335,694
4,335,695
492 4,335,696
527 4,335,697
537 4,335,698
568 4,335,699
617 4,335,700

CLASS 124

26 4,335,701

CLASS 126

15 R 4,335,702
121 4,335,703
293 4,335,704
299 R 4,335,705
435 4,335,706
440 4,335,707
442 4,335,708
443 4,335,709

CLASS 128

1 C 4,335,710
1 R 4,335,711
4,335,712
9 4,335,713
79 4,335,714
92 EB 4,335,715
213 A 4,335,716
214 G 4,335,717
218 N 4,335,718
246 4,335,719
270 4,335,720
285 4,335,721
4,335,722
349 B 4,335,723
395 4,335,724
399 4,335,725
400 4,335,726
419 PG 4,335,727
460 4,335,728
674 4,335,729
760 4,335,730

CLASS 132

84 R 4,335,731
123 4,335,732

CLASS 134

4 4,336,072
6 4,336,073
8 4,336,074

CLASS 136

251 4,336,413

CLASS 137

1 4,335,733
77 4,335,734
81.1 4,335,735
87 4,335,736
98 4,335,737
246.22 4,335,738
269 4,335,739
364 4,335,740
426 4,335,741
494 4,335,742
4,335,743
522 4,335,744
554 4,335,745
576 4,335,746
614.06 4,335,747
614.11 4,335,748
625.22 4,335,749
625.29 4,335,750

CLASS 138

30 4,335,751
89 4,335,756
92 4,335,757
97 4,335,752
109 4,335,753
145 4,335,755
146 4,335,754

CLASS 140

88 4,335,758

CLASS 141

5 4,335,759
129 4,335,760
371 4,335,761

CLASS 144

194 4,335,762
209 A 4,335,763
209 R 4,335,764
286 R 4,335,765
343 4,335,766
370 4,335,767

CLASS 145

4 4,335,768

CLASS 148

2 4,336,075
3 4,336,076
4,336,077
9 R 4,336,078
11.5 N 4,336,079
12 B 4,336,081
12 C 4,336,080
127 4,336,083
433 4,336,082

CLASS 149

24 4,336,084
45 4,336,085

CLASS 150

1 4,335,769
8 4,335,770

CLASS 152

361 FP 4,335,771

CLASS 156

71 4,336,086
85 4,336,087
89 4,336,088
152 4,336,089
154 4,336,090
244.12 4,336,091
269 4,336,092
299 4,336,094
361 4,336,095
498 4,336,096
527 4,336,097
568 4,336,098
614 4,336,099
630 4,336,100

CLASS 157

1.28 4,335,772

CLASS 159

16 S 4,336,101

CLASS 160

23 R 4,335,773
84 R 4,335,774
177 4,335,775
320 4,335,776
332 4,335,777

CLASS 162

30.1 4,336,102

CLASS 164

119 Re.30,979
150 4,335,778
440 4,335,779
441 4,335,780

CLASS 165

1 4,335,781

4,335,782
8 4,335,783
9 4,335,784
39 4,335,785

CLASS 166

106 4,335,786
273 4,335,787
278 4,335,788

CLASS 172

49.5 4,335,789
4,335,790

CLASS 174

14 R 4,336,414
47 4,336,415
48 4,336,416
52 R 4,336,417
53 4,336,418
68.5 4,336,419
128 S 4,336,420

CLASS 175

52 4,335,792
65 4,335,793
228 4,335,791
337 4,335,794

CLASS 179

1 SD 4,336,421
18 DA 4,336,422
18 FG 4,336,424
18 GF 4,336,423
115.5 H 4,336,425

CLASS 180

6.2 4,335,795
53 D 4,335,796
69 R 4,335,797
90 4,335,798
175 4,335,799
236 4,335,800

CLASS 181

213 4,335,801
290 4,335,802

CLASS 182

12 4,335,803

CLASS 184

55 A 4,335,804

CLASS 187

12 4,335,805

CLASS 188

73.33 4,335,806

CLASS 191

32 4,335,807

CLASS 192

85 AB 4,335,808

CLASS 194

1 R 4,335,809

CLASS 196

14.52 4,336,106

CLASS 198

380 4,335,810
446 4,335,811

CLASS 200

61.54 4,336,428
61.6 4,336,427
67 DB 4,336,429
144 B 4,336,430
292 4,336,431
615 4,336,426

CLASS 202

239 4,336,107
248 4,336,108

CLASS 203

34 4,336,109
60 4,336,110

CLASS 204

1 T 4,336,111
5 4,336,112
17 4,336,113
52 R 4,336,114
98 4,336,115
159.11 4,336,116
192 C 4,336,117
192 EC 4,336,118
192 P 4,336,119
192 SP 4,336,120
195 R 4,336,121
222 4,336,122
252 4,336,123
284 4,336,124

CLASS 206

1.8 4,335,812
45.33 4,335,813
198 4,335,814
277 4,335,815
444 4,335,816
610 4,335,817

CLASS 208

8 R 4,336,125
11 R 4,336,126
4,336,127
4,336,128
180 4,336,129
243 4,336,130

CLASS 209

3 4,336,131
500 4,336,132
592 4,335,818

CLASS 210

95 4,336,133
127 4,336,134
151 4,336,135
178 4,336,136
242.3 4,336,137
321.4 4,336,138
401 4,336,139
677 4,336,140
694 4,336,141
724 4,336,142
740 4,336,143
758 4,336,144

CLASS 211

41 4,335,819

CLASS 213

75 TC 4,335,820

CLASS 215

1 C 4,335,821
12 R 4,335,822
206 4,335,823
224 4,335,824

CLASS 219

10.41 4,336,432
10.55 B 4,336,433
10.55 F 4,336,434
4,336,435
61 4,336,436
78.16 4,336,437
121 LH 4,336,439
121 PG 4,336,438
124.34 4,336,440
137 WM 4,336,441
400 4,336,442
4,336,443
505 4,336,444

CLASS 220

82 R 4,335,825
260 4,335,826
284 4,335,827
334 4,335,828
458 4,335,829
462 4,335,830
901 4,335,831

CLASS 221

67 4,335,832

CLASS 222

23 4,335,833
63 4,335,834
95 4,335,835
108 4,335,836
137 4,335,837

CLASS 223

91 4,335,838

CLASS 224

315 4,335,840

CLASS 227

90 4,335,841

CLASS 229

15 4,335,842
27 4,335,843
43 4,335,844
69 4,335,845

CLASS 233

7 4,335,846

CLASS 235

92 DE 4,336,446
92 EA 4,336,447
92 MS 4,336,448
92 ST 4,336,445
429 4,336,449

CLASS 236

46 R 4,335,847

CLASS 237

8 R 4,335,848
12.3 B 4,335,849
54 4,335,850

CLASS 239

3 4,335,851
68 4,335,852
239 4,335,853
428.5 4,335,854
654 4,335,855

CLASS 241

37.5 4,335,860

CLASS 242

7.05 B 4,335,856
35.5 A 4,335,859
192 4,335,857
195 4,335,858

CLASS 248

246 4,335,861
289.1 4,335,862
316 D 4,335,863
4,335,864
558 4,335,865

CLASS 250

201 4,336,450
255 4,336,451
338 4,336,452
344 4,336,453
381 4,336,454
385 4,336,455
436 4,336,456
439 P 4,336,457
445 T 4,336,458
459 4,336,459
506 4,336,460
551 4,336,461

CLASS 251

9 4,335,866
28 4,335,867

CLASS 252

8.55 R 4,336,145
4,336,146
49.5 4,336,147
49.7 4,336,148
56 R 4,336,149
4,336,150
106 4,336,151
4,336,152
182 4,336,153
301.21 4,336,155
301.4 H 4,336,154
389 A 4,336,156
408 4,336,157
4,336,158
411 R 4,336,159
417 4,336,160
426 4,336,161
438 4,336,162
518 4,336,163
522 R 4,336,164
528 4,336,165

CLASS 256

1 4,335,868

CLASS 260

112 R 4,336,185
112.5 R 4,336,186
4,336,188
112.5 T 4,336,187
124 R 4,336,189
149 4,336,190
239 A 4,336,191
239.3 T 4,336,192
239.57 4,336,193
397.45 4,336,200
410.9 V 4,336,201
417 4,336,203
464 4,336,204
465 C 4,336,205
465.4 4,336,206
936 4,336,207

CLASS 261

71 4,336,208

CLASS 264

3 R 4,336,209
8 4,336,210
22 4,336,211
4,336,212
40.1 4,336,213
49 4,336,214
63 4,336,215
65 4,336,216
105 4,336,217
111 4,336,218
117 4,336,219
229 4,336,220
241 4,336,221
519 4,336,222

CLASS 266

158 4,335,869
193 4,335,870

CLASS 267

64.28 4,335,871

CLASS 269

43 4,335,872
228 4,335,873

CLASS 271

95 4,335,874

CLASS 272

70 4,335,875

CLASS 273

1 R 4,335,876
30 4,335,877
119 R 4,335,878
260 4,335,879
310 4,335,880
348 4,335,881
363 4,335,882

CLASS 277

3 4,335,883
4,335,884
13 4,335,885
25 4,335,886
84 4,335,887
96.1 4,335,888
152 4,335,889
235 B 4,335,890

CLASS 280

19 4,335,891
33.99 R 4,335,892
42 4,335,893
43.23 4,335,894
47.13 R 4,335,895
47.17 4,335,896
47.18 4,335,897
81 R 4,335,898
259 4,335,899
649 4,335,900
711 4,335,901
804 4,335,902

CLASS 281

46 4,335,903

CLASS 285

18 4,335,904
20 4,335,905
22 4,335,906
157 4,335,907
250 4,335,908

CLASS 292

5 4,335,909
259 R 4,335,910
262 4,335,911
336.3 4,335,912

CLASS 294

19 R 4,335,913
86 R 4,335,914
142 4,335,839

CLASS 296

98 4,335,915
100 4,335,916

CLASS 297

216 4,335,918
362 4,335,919
366 4,335,917
408 4,335,920

CLASS 299

86 4,335,921

CLASS 303

6 C 4,335,922

CLASS 307

35 4,336,462
66 4,336,463
141.4 4,336,464
238.3 4,336,465
297 4,336,466
350 4,336,467
440 4,336,468

CLASS 308

15 4,335,923
72 4,335,924
160 4,335,925

CLASS 310

11 4,336,469
42 4,336,470
49 R 4,336,471
68 E 4,336,472
88 4,336,473
179 4,336,474
198 4,336,475

CLASS 313

60 4,336,476
142 4,336,477
478 4,336,478
487 4,336,479
495 4,336,480

CLASS 315

241 P 4,336,481

CLASS 316

3 4,335,926

CLASS 318

443 4,336,482
662 4,336,483
696 4,336,484

CLASS 320

15 4,336,485

CLASS 322

63 4,336,486
99 4,336,487

CLASS 323

215 4,336,488
231 4,336,489
305 4,336,490
326 4,336,491

CLASS 324

54 4,336,492
61 R 4,336,493
62 4,336,494
158 P 4,336,496
158 T 4,336,495
162 4,336,497
230 4,336,498

CLASS 328

188 4,336,499

CLASS 329

50 4,336,500

CLASS 330

109 4,336,501
253 4,336,502
4,336,503
274 4,336,504

CLASS 331

1 R 4,336,505
108 D 4,336,507
113 R 4,336,508
114 4,336,509
163 4,336,510
178 4,336,511

CLASS 332

9 R 4,336,512

CLASS 333

173 4,336,513
195 4,336,514
4,336,515

CLASS 335

171 4,336,516
205 4,336,517
4,336,518
206 4,336,519

CLASS 337

191 4,336,520
248 4,336,521

CLASS 339

5 R 4,335,927
94 C 4,335,928
97 R 4,335,929
183 4,335,930
217 S 4,335,931
218 M 4,335,932

CLASS 340

52 R 4,336,522
311.1 4,336,524
347 AD 4,336,525
4,336,526
347 DA 4,336,527
4,336,528
365 R 4,336,529
365 VL 4,336,530
568 4,336,531
600 4,336,532
666 4,336,533
753 4,336,534
768 4,336,535
783 4,336,536
825.79 4,336,523
850 4,336,537

CLASS 343

5 R 4,336,538
6 TV 4,336,539
16 R 4,336,540
18 E 4,336,541
100 PE 4,336,542
705 4,336,543

CLASS 346

1.1 4,336,544
4,336,545
74.7 4,336,546
75 4,336,547
140 R 4,336,548

CLASS 350

96.19 4,335,933
96.33 4,335,934
166 4,335,935
335 4,335,936
336 4,335,937
357 4,335,938
385 4,335,939

CLASS 354

8 4,335,940
15 4,335,941
25 4,335,942
60 R 4,335,943
64 4,335,944
197 4,335,945
228 4,335,946
230 4,335,947
275 4,335,948

CLASS 355

3 FU 4,335,951
3 R 4,335,949
4,335,950
14 CH 4,335,953
14 R 4,335,952
14 SH 4,335,954
16 4,335,955
27 4,335,956
30 4,335,957
48 4,335,958

CLASS 356

218 4,335,959
240 4,335,960
361 4,335,961
376 4,335,962

CLASS 357

15 4,336,549
42 4,336,550
80 4,336,551

CLASS 358

21 R 4,336,552
120 4,336,553
124 4,336,554
127 4,336,555
213 4,336,556
4,336,557
285 4,336,558

CLASS 360

73 4,336,559
137 4,336,560

CLASS 361

19 4,336,561
88 4,336,562
93 4,336,563
154 4,336,564
225 4,336,565
242 4,336,566
283 4,336,567
386 4,336,568
395 4,336,569

CLASS 362

4 4,336,570
60 4,336,571
66 4,336,572
78 4,336,573
101 4,336,574
147 4,336,575
240 4,336,576
267 4,336,577
4,336,578
272 4,336,579
347 4,336,580
457 4,336,581

CLASS 363

15 4,336,582
21 4,336,583
28 4,336,584
79 4,336,585
127 4,336,586
134 4,336,587

CLASS 364

200 4,336,588
403 4,336,589
418 4,336,590
4,336,591
426 4,336,592
431 4,336,593

457 4,336,594
508 4,336,595
559 4,336,596
560 4,336,597
710 4,336,598
752 4,336,599
785 4,336,600
900 4,336,601
4,336,602

CLASS 365

182 4,336,603
4,336,604

CLASS 366

2 4,335,966
63 4,335,963
114 4,335,964
150 4,335,965

CLASS 367

105 4,336,605
117 4,336,606
123 4,336,607

CLASS 368

82 4,336,608
188 4,336,609

CLASS 370

15 4,336,610

CLASS 371

38 4,336,611
39 4,336,612

CLASS 372

62 4,336,506

CLASS 373

85 4,336,411
110 4,336,412

CLASS 375

9 4,336,613

CLASS 376

245 4,336,103
249 4,336,104
405 4,336,614

CLASS 400

119 4,335,967
120 4,335,968
124 4,335,969
144.2 4,335,970
619 4,335,971

CLASS 403

11 4,335,972
300 4,335,973

CLASS 404

77 4,335,975
92 4,335,974
114 4,335,976

CLASS 405

52 4,335,977
129 4,335,978
202 4,335,979
217 4,335,980
221 4,335,981

CLASS 406

48 4,335,982

CLASS 407

41 4,335,983
114 4,335,984

CLASS 409

3 4,335,985
116 4,335,986

CLASS 414

27 4,335,987
387 4,335,988
405 4,335,989
457 4,335,990
519 4,335,991
667 4,335,992
748 4,335,993

CLASS 415

90 4,335,994
144 4,335,995

CLASS 416

88 4,335,996
185 4,335,997
213 R 4,335,998

CLASS 417

38 4,335,999
53 4,336,000
63 4,336,001
203 4,336,002
217 4,336,003
283 4,336,004

CLASS 418

126 4,336,005
131 4,336,006
183 4,336,007

CLASS 422

24 4,336,223
46 4,336,224
106 4,336,225
109 4,336,226
111 4,336,227
129 4,336,228
148 4,336,229

CLASS 423

3 4,336,230
24 4,336,231
164 4,336,232
228 4,336,233
329 4,336,234
332 4,336,235
435 4,336,236
531 4,336,237
584 4,336,238
4,336,239
4,336,240
588 4,336,241
594 4,336,242

CLASS 424

28 4,336,243
35 4,336,244
49 4,336,245
70 4,336,246
95 4,336,247
101 4,336,248
121 4,336,249
177 4,336,250
184 4,336,251
198 4,336,252
244 4,336,263
246 4,336,253
251 4,336,254
4,336,255
256 4,336,256
4,336,257
263 4,336,258
265 4,336,259
266 4,336,260
270 4,336,262
272 4,336,264
273 R 4,336,261
283 4,336,265
305 4,336,266
309 4,336,267
330 4,336,268
4,336,269
347 4,336,270

CLASS 425

74 4,336,015
116 4,336,009
129 R 4,336,011
131.1 4,336,012
141 4,336,010
145 4,336,013
403 4,336,014
406 4,336,008

CLASS 426

55 4,336,271
250 4,336,272
321 4,336,273
643 4,336,274

CLASS 427

27 4,336,275
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Gerald J. Mossinghoff, *Commissioner*